The Goulstonian Lectures

ON

THEORIES OF IMMUNITY AND THEIR CLINICAL APPLICATION.

Delivered before the Royal College of Physicians of London on March 17th, 19th, and 24th, 1903,

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LECTURE II.[1]

Delivered on March 19th.

MR. PRESIDENT AND GENTLEMEN,—Having considered in a brief general way the broad outline of Ehrlich's theory of immunity it behoves us to review some of the phenomena more in detail before proceeding to their practical clinical and pathological applications.

It is well to recall the fundamental fact on which depends the production of all these bodies or substances which we are about to study. It seems to be a universal physiological reaction of the healthy organism to produce substances more or less specifically antagonistic to alien cells or cell products. Although it is a familiar fact that tolerance can be established towards some crystallisable poisons, yet the "antidote" (if any) thus formed is not of the same nature as when an organised cell product is the poison. Yet it must not be thought that the distinction either lies between colloid and crystalloid or that the poison or antidote is necessarily of proteid nature. Antidotes have been obtained for crystallised proteids while attempts to produce them for starch or similar products as well as for gelatin have failed. But in the case of gelatin, at any rate, a species of antidote in the form of a gelatin-dissolving enzyme is produced. We have also seen that the antidote is the cast-off link by which the poison would otherwise attach itself to the cell. If this link does not exist the poison cannot act on the cell and there is no need for an antidote.

Here may appropriately be introduced a new symbolic method (slightly modified) devised by Professor H. G. Ernst of Harvard University[2] which helps to simplify the conception of Ehrlich's theory.

H	represents	the	cytophile haptophorous	atom-group	in the molecule.
H	,,		complementophile	,,	,, ,,
T	,,		toxophorous	,,	,, ,,
N	,,		nutrient	,,	,, ,,
L	,,		lysin	,,	,, ,,
X	,,		the remainder of the molecule.		

Then to represent the interaction of toxins and antitoxins the following may be used :—

Toxin molecule contains **H + T + X**

Antitoxin ,, ,, **H + X**

The two H groups are bound together; therefore the T group in the toxin cannot be bound to anything else and the substance exists as a harmless material in the blood stream.

The production of the antitoxin by the injection of the toxin or toxoid may be represented as follows :—

Tissue cell molecule contains **H + N + X**

Toxin ,, ,, **H + T + X** (or toxoid = **H + X**)

The **H** groups bind the two together, but the **H** group of the tissue-cell molecule is necessary for the metabolism of the cell; it must be reproduced if the cell is to live; being so reproduced the reproduction occurs in excess and then the **H** groups are thrown off and exist free in the blood stream as

H + X, which is the antitoxin.

The group **T** is not necessary for this purpose, hence the formation of antitoxin from toxoid.

Bordet's work on haemolysis and Ehrlich's later work showed that two substances were necessary for other reactions and necessitated the supposition of the existence of two haptophorous atom-groups. In accordance with this idea the reaction in haemolysis may be shown thus :—

It requires (1) the cell to be destroyed, (2) the mediator, and (3) the complement.

The cell molecule contains **H + N + X**

The mediator ,, **H + *H* + X**

The complement ,, ***H*** **+ L + X**

The complement is bound to the immune body by the *H* group, the two to the blood-cell by the **H** group in the mediator, and then the **L** group in the complement may act.

In the case of the complementoid, in which the L (functional) group is absent, union takes place with the mediator but no lysis can occur.

The production of the mediator requires (1) blood-cells injected, (2) the body-cell in which the injection is made, and (3) the complement.

The reaction is shown thus :—

The blood-cell molecule contains **H + N + X**

The body-cell ,, ,, **H + *H* + N + X**

The complement ,, ,, ***H*** **+ L + X**

The two *H* and **H** groups in the tissue cell are used up but must be reproduced; being reproduced, this occurs in excess; they are thrown off and exist free in the blood stream as

H + *H* + X, which is the mediator.

So with bacteriolysis; the formulæ are the same, except in this instance the cell to be acted upon is the bacterial cell and not the blood-cell.

The bacterial cell molecule contains **H + T + X**

The mediator ,, ,, **H + *H* + X**

The complement ,, ,, ***H*** **+ L + X**

As before the *H* groups in the complement and the mediator combine, and then these two are joined to the bacterial cell molecule by the **H** groups, and thus the **L** group in the complement may exert its destructive action upon the bacterium.

The production of the bacteriolytic power requires (1) the bacterial cell to be injected; (2) the tissue cell from which the mediator is to be produced; and (3) the complement existing in the fresh blood stream. The reaction is as follows :—

The bacterial cell molecule contains **H + T + X**

The tissue cell ,, ,, **H + *H* + N + X**

The complement ,, ,, ***H*** **+ L + X**

The **H** atom-groups in the tissue cell molecule being taken up are reproduced, cast off, and exist free in the blood stream as **H + *H* + X**, the mediator.

Cytolytic action may also be shown :—

The cell molecule to be acted upon contains **H + N + X**

The mediator molecule contains **H + *H* + X**

The complement molecule ,, ***H*** **+ L + X**

The **H** and *H* groups are joined together and the **L** group of the complement may then act.

The production of the cytolytic property is secured thus :—

The foreign-cell molecule injected contains **H + N + X**

The tissue-cell molecule, the body in which injection is made, contains **H + *H* + N + X**

The complement molecule contains ***H*** **+ L + X**

The **H** and *H* groups in the tissue cells are reproduced in excess and exist free as **H + *H* + X**, the mediator in cytolysis.

Precipitin reactions may also be shown :—

The blood globulin molecule contains **H + N + X**

The immune body ,, ,, **H + *H* + X**

The complement ,, ,, ***H*** **+ L + X**

The **H** and *H* groups being bound together, the **L** atom-group may act, in this instance producing the precipitate, and therefore **L** may be more clearly represented as **P**.

The production of the precipitin power occurs as in all the others :—

Blood injected, the molecule contains **H + N + X**

The body cell (in which the injection is made) molecule contains **H + *H* + N + X**

The complement ,, ***H*** **+ P + X**

The **H** and *H* groups are reproduced in excess as before and exist free as **H + *H* + X**, the mediator necessary for this reaction.

Anti-complement reaction is shown :—

The complement molecule contains ***H*** **+ L + X**

The anti-complement molecule ,, ***H*** **+ X**

The two *H* groups combine and the complement is rendered harmless by this conjunction.

The production of the anti-complement is shown thus :—

The injected serum (containing complement) molecule contains ***H*** **+ N + X**

The receiving blood molecule contains ***H*** **+ (*H* + *H* + *H* + *H* + &c.) + N + X**

The two *H* atom-groups combine, the one in the receiving blood is renewed in excess, is thrown off, and exists free as

H **+ X** the anti-complement.

[1] Lecture I. was published in THE LANCET of March 21st, p. 775.

[2] Transactions of the American Academy of Arts and Sciences.

It is, of course, to be understood that the letters and formulæ given above are representative of the general reaction only in each case. If it be desired to express a specific reaction—as, for instance, that of the diphtheria antitoxins—it may be done by placing a sub-letter D in each place where its need is felt; for example, $H_D + X$ with the sub-letter at H represents the special reaction used for illustration; any other reaction may be shown in its specific nature by the same means.

The molecule must also be supposed at all times to contain in the letter X all the other atom-groups not needed for the expression of the special reaction under consideration.

ANTITOXINS.

In the case of the toxins the poison is a cell product and the antitoxin merely the antidote to this cell product. But as regards the mode of formation of this antidote there is difference of opinion. Metchnikoff thought, and still thinks, that it may be merely modified toxin, in spite of the facts that one unit of toxin may lead to the production of about 100,000 units of antitoxin, that its production may be increased by pilocarpine injections, and that immunised animals may by repeated venesections have a quantity equal to the whole volume of their blood withdrawn and yet at the end supply a serum of nearly the same antitoxic power as at first. Moreover, antitoxin exists normally in demonstrable quantity in the blood of some men and animals—corroborative evidence of Ehrlich's views. It must also be clearly recognised that it is not necessarily one kind of cell which may form antitoxin, although the effects of the toxin may be most evident on one species of cell. Thus the tetanus toxin fixes on the cells most susceptible to it—viz., of the central nervous system. We know this to be so clinically, but it can also be shown in the manner of a chemical experiment. On mixing tetanus toxin with an emulsion of brain substance and then injecting it, it is found to have lost its toxic power. If the mixed toxin and emulsion be centrifugalised the supernatant fluid has no more toxic power. It is no mere mechanical precipitation, since boiled brain substance has no neutralising effect. In animals but slightly susceptible to tetanus the fixing and neutralising power of the brain substance is correspondingly small. The proof value of these experiments is not affected by the fact that the same result can be obtained with lecithin, cholesterin, &c. It is of interest to inquire whether the sensitiveness to tetanus toxin can be yet further localised. I have begun experiments to test whether there is any difference in the neutralising power of "motor area" and other cells, but these experiments are still in the initial stage. It has been affirmed recently that the cerebral substance of an animal immunised against tetanus has but little, if any, more antitoxic power than that of normal animals and that the blood always has more than the brain. If this be correct it may be due to an inherent peculiarity of the cells of the central nervous system in setting free the superfluous receptors more rapidly than do other cells. Perhaps the most striking evidence to show the local cellular formation of antitoxin is obtained by rapidly immunising one eye of a rabbit to abrin instillations. The cornea of that eye only will then be found capable of neutralising abrin.

Some animals are very susceptible to tetanus toxin in whatever manner introduced, whether subcutaneously or intra-cerebrally, whilst others are affected only when the poison is introduced intra-cerebrally. In the latter case it is found that the toxin is deposited and fixed in other tissues of the body. If the toxin is retained by only one kind and that a vital kind of cell, like the nerve cell of the central nervous system as in mice and guinea-pigs, obviously immunisation with toxins is impossible: and, as a matter of fact, it can only be done with toxoids. Yet, on the whole, it must be admitted that while no experiments inconsistent with the theory have been brought forward the total evidence for the formation of antitoxin by the cell most sensitive to the toxin is not yet complete.

According to hypothesis the formation of antitoxin will depend only on there being suitable receptors for the haptophore molecule of the poison, since the saturation of the receptor will stimulate the cell to the production of others whether a toxophore group be present or no, provided that it does not irreparably damage the cell. It then merely stimulates to increased normal action. If there are no suitable receptors natural immunity exists. The poison cannot attack the cell and consequently does not stimulate to the production of antitoxin. Of this nature is the immunity of the tortoise to tetanus and of the pigeon to hydrophobia. The poison remains in the circulation for some time, but the animal does not become ill nor does it form any antitoxin. On the other hand, the poison may disappear from the circulation and be merely deposited, without uniting with the cells, in the tissues of the body. Thus scorpions may be injected with tetanus toxin. It disappears from the circulation and may be shown to be present in the liver cells months later. There is yet a third possibility. The receptors may be suitable but the cells remain unaffected by the toxophore group. This is said to be the case with the alligator. Although unaffected by tetanus toxin which rapidly disappears from the blood, it forms a considerable quantity of antitoxin. According to Metchnikoff it is the large mononuclear leucocytes—the only form of leucocyte in the alligator—which produce the antitoxin and he supports this view by experiments showing that the poisons can be found fixed in the macrophages while the surrounding fluid is free. There can be no doubt, in view of these observations and of others concerning changes in the marrow during infection, that the leucocytes play a considerable but not exclusive part in the formation of antitoxin, but this is qnite another matter to the destructive phagocytosis of bacteria.

The behaviour of leucocytes in acute diseases is not at all stages consistent with Metchnikoff's theory. There is generally more or less leucocytosis; notable exceptions are enterica and measles. In enterica it might be supposed that the leucocytes remained near the battlefield in the abdominal cavity, whereas in the exanthemata the cutaneous hyperæmia brought them to the surface and into the general circulation. But in pneumonia we have leucocytosis, although an internal disease, whilst in measles with a superficial rash there is none. Moreover, according to Metchnikoff, in measles, being an acute disease and in many points resembling scarlet fever, there ought to be an increase of microphages, whereas it is the macrophages which actually are increased in number; so that if Metchnikoff be right there should either be a marked difference in the causes of the two diseases or the streptococcal infection which plays a considerable part, especially in the second stage of scarlet fever, overshadows the primary cause.

HÆMOLYSINS.

The hæmolysin in the ordinary sense is the antidote—viz., the receptor cast off—resulting from the introduction of alien blood into an organism the serum of which then acquires the power of dissolving these alien xanthocytes. Many substances, of course, are capable of causing hæmolysis. Distilled water does so, some glucosides like saponin and solanin, some organised bodies as snake venom, and also many bacterial products. It is a phenomenon which, less generally known than the action of toxin and antitoxin, has perhaps received more experimental study and investigation than any other portion of the theory of immunity. The reason for this, no doubt, lies in the comparative ease with which the experiments may be carried out, mostly in the test tube, with correspondingly unequivocal results that throw a vivid light on the whole question. They raise the xanthocyte from its humble, though important, position of a mere oxygen-carrier and assign to it some duties for which vitality is a necessary function. They have given an insight into the multiplicity of factors concerned in the process of immunity and infection and have revealed a complexity compared with which the scheme enunciated in the first lecture is merely a diagram.

The more simple cases of hæmolysis have received a physical explanation. Sapotoxin has a powerful hæmolytic action—0·001 cubic centimetre of a 2 per cent. solution will lake one cubic centimetre of a 5 per cent. solution of human blood in normal NaCl in a few minutes. I find that solanin has a similar effect, and with both substances the quantity required varies much with different kinds of blood. Apparently this is due to a combination of sapotoxin with the cholesterin and lecithin of the blood corpuscle. When added in the test tube to sapotoxin, cholesterin is able to neutralise its laking power (Stewart). The part which may be played by lecithin is seen in the action of cobra venom. Certain xanthocytes (the difficulty in hæmolysis apparently runs almost parallel with the difficulty of obtaining crystalline hæmoglobin from them) are not hæmolysed by cobra venom alone, but they are on the addition of a small quantity of lecithin, which then apparently acts as a complement. The corpuscle thus contains within itself the necessary element for its own destruction; not only in the lecithin, but, as we shall see, in another thermolabile complement.

Since these experiments have brought to light several new facts they are worth considering more in detail. It had been known for some years that while weak solutions of cobra

venom would hæmolyse xanthocytes strong solutions might not. Ehrlich and Kyes attribute this result to the presence of an endo-complement the existence of which they demonstrated in the following manner. Xanthocytes and a strong solution of cobra venom were mixed and then separated by centrifugalisation. On adding normal NaCl solution to the xanthocytes no hæmolysis occurred until a suitable complement was subsequently added. The avidity of the excess of amboceptors in the cobra venom had withdrawn all the complement from the xanthocytes. The proof can be varied by making a solution of the complement from washed corpuscles in water and adding this to xanthocytes—e.g., of the ox—not hæmolysable by cobra venom alone; they are then dissolved. Since the action can be destroyed by heating to 56° C. the substance is a complement in a genuine sense.

As the authors point out, these results are inimical to Bordet's theory which supposes that the amboceptor enables the complement to enter (and to destroy) the cell, since we have the complement in this instance already in the cell, which it is unable to destroy unaided. They found further, in a systematic examination of Calmette's statement that fresh serum sometimes had an anti-hæmolytic action and that certain sera acted better when heated first to 62° C., that quite a number of sera had activating powers for assisting the hæmolysis of certain xanthocytes by cobra venom, when heated even to 100° C., which powers might be greater or less than they had been in the serum unheated or heated to 56° C. Moreover, they showed by treating serum with from 8 to 10 volumes of alcohol that the activating substance remained in solution while the inhibitory substance went down with the precipitate. The solubility in alcohol and ether identified the substance as being probably either cholesterin, lecithin, fat, or fatty acids. Experiment showed that lecithin even in very minute quantity possessed activating power for cobra venom. It even enables hæmolysis to take place at 0° C. In all probability, therefore, the venom amboceptor contains at least two complementophile groups either of which is dominant—viz., can produce hæmolysis by itself—but they are no doubt more powerful when acting together. The authors further point out that the cobra venom cannot act as a sensitiser towards lecithin in Bordet's sense. If this were so the more cobra venom the less lecithin should be required, whereas the reverse is actually the case; the excess of cobra venom deviates the lecithin from its complementary action.

The chemical position of the various bodies which we have been considering is not without interest. By using Hofmeister's method of fractionally salting out the various proteids from immune serum, Pick showed that no antitoxins, lysins, or agglutinins were contained in the fibrins, the globulin, or the albumin; they appeared in either the euglobulins or the pseudo-globulin. The distribution was rather remarkable. In the horse alone were any immune bodies in the pseudo-globulin; these were diphtheria antitoxin and typhoid agglutinin. In the goat they were all (viz., diphtheria and tetanus antitoxin, cholera and typhoid agglutinin, and cholera lysin) in the euglobulin. Cholera agglutinin was in euglobulin in the horse and typhoid agglutinin in the euglobulin in the rabbit and guinea-pig also. The goat was the only animal tested for all bodies.

The difference between diphtheria antitoxin in the goat and horse was sufficiently marked to enable them to be separated, when mixed, by fractional precipitation. With such a marked difference in chemical constitution it is not remarkable that the physiological and therapeutical antitoxins obtained from various species of animals should exhibit marked differences.

CYTOTOXINS.

The experiments on xanthocytes naturally led to their extension to many forms of cells and to the study of various other cytolysins, principally by Metchnikoff and his school. Thus toxins for spermatozoa, ciliated epithelium, leucocytes, kidney tissue, &c., were made. Comparatively little is known about them as yet, but with more extended knowledge they are likely to play a considerable part in our conceptions of the etiology of non-infectious disease. Thus Delezenne produced acute yellow atrophy by an anti-hepatic serum. The results appear not to be strictly specific; thus in most cases hæmolysins are produced at the same time.

The production of anti-cytotoxins is also of importance and may have a therapeutic future. Metchnikoff was able to produce an anti-spermatoxin in a rabbit from which the testes had been removed. A practical interest attaches to an experiment of this description. For example, in the treatment of myxœdema with thyroid gland we can hardly suppose that the few grains of gland taken per diem really replace the normal activity. At the same time we know that a large dose may produce toxic effects. Consequently a part of the beneficial therapeutic action seems to be due to the production of an antitoxin to the toxin contained in the thyroid. Normally the antitoxin would be elaborated by the gland itself, but it may be, and is, vicariously prepared in the absence of the thyroid by other cells.

By a converse reasoning the indifferent results obtained with pancreatic extract in diabetes and, as a rule, with suprarenal extract in Addison's disease are explained. The function of pancreas (and suprarenal) is not to neutralise but to elaborate. The symptoms in diabetes point rather to perverted metabolism than to production of toxin. The exhibition of pancreatic extract will neither replace this activity nor stimulate other cells to vicarious performance of such function. This object would rather be attained, if at all, by the injection of an anti-pancreatic serum. There is the more hope since we know that in man the injection of a hæmolytic serum stimulates and leads subsequently to an increased formation of xanthocytes.

Organo-therapy should not be lightly undertaken and must be rationally employed. The tentative administration of organs corresponding to those diseased has led to many disappointments, but it must be tried and it is not so dangerous as to make the experiment undesirable until theory and knowledge are more developed. Fortunately, just as vaccination began with small-pox and antitoxin treatment with diphtheria, so organo-therapy began with myxœdema—each with the most successful result and most appropriate disease from the start.

It behoves us now to pay some attention to Metchnikoff's theory as modified by him to the present state of knowledge. It is based on the phenomena following the injection of cells into the peritoneal cavity of the guinea-pig. After a temporary destruction of the leucocytes already present, during which period the injected cells remain unaltered, there follows an immigration of phagocytes (macrophages) which take up the alien cells. Having done this they wander back into various organs—e.g., the liver—meanwhile dissolving the ingested cells by means of the hypothetical cytolytic ferment termed by Metchnikoff "cytase." From the spleen and lymphatic glands he obtained an extract possessing hæmolytic properties destroyed by heating at 56° C. He considers this due to the cytase liberated by maceration from the macrophages. If bacteria are used in the experiment instead of alien cells it is chiefly the polymorphonuclear leucocytes (microphages) which act as just described. For this reason the respective digestive ferments were termed by Metchnikoff macrocytase and microcytase respectively. On repeating, in the ordinary way of immunisation, the injection of xanthocytes the digestive action takes place already in the peritoneal cavity instead of on the journey back to the spleen or elsewhere and hæmolysis occurs. This Metchnikoff attributes to the formation in the meantime of a special immune body (*fixateur*) which sensitises the xanthocyte for the action of the cytase (*complement*). The cytase is not free in the blood but is secreted by the leucocytes since no hæmolysis occurs on subcutaneous injection of xanthocytes.

The following experiments support this view in an even more striking fashion. By the injection of spermatozoa an anti-spermatoxin is formed which dissolves the spermatozoa of the species of animal used *in vitro*, although the spermatozoa in the testes remain uninjured. But if these spermatozoa are put into the serum of a normal animal loss of motility occurs at once. Consequently they were sensitised, so that if the cytase were free we must make the unlikely supposition that it could not penetrate the vessel walls. Yet they are dissolved on intra-peritoneal, although not on subcutaneous, injection; consequently the cytase was not circulating free in the blood.

In the case of bactericidal sera the microcytase is the efficient ferment. The difference was ingeniously demonstrated by Gengou, who obtained exudates consisting of macrophages and microphages respectively and showed that their products behaved differently. The former had hæmolytic but not bactericidal properties; the latter possessed bactericidal but no hæmolytic power. The same observer also showed that unclotted immune blood had hardly any bactericidal action. I am myself attempting to decide this

question in the case of antitoxic sera by direct transfusion of blood from the immunised to the unimmunised animal and comparing it with the injection of serum.

The bactericidal action being hypothetically due to two ferments—one special and one general—Metchnikoff supposes, in order to explain the production of immune sera, that the repeated injection of the bacteria leads to an over-production of the specific ferment, which is then secreted. There is no over-production of the general ferment. The special ferment sensitises the bacteria for the action of the general ferment. Thus Metchnikoff, in opposition to Buchner, admits the existence of at least two alexins or complements. But in general he believes that the leucocytes deal with the destruction of bacteria by themselves. In a similar manner Metchnikoff explains the origin of the antitoxins. Neither theory explains all the phenomena without strain, yet on the whole there is a gratifying uniformity of idea underlying each.

No doubt in varying circumstances the conditions are different. At one time there will be more immune body or complement locked up in the leucocyte; at another moment the excess may be in the blood stream. Very likely there is a perpetual ebb and flow. Without a hypothesis of this kind some of the phenomena are difficult to explain on any theory, and to my mind the weakest point in Ehrlich's theory is the strained explanation of the action of toxin in highly immunised animals. When they succumb it is supposed that the avidity of the toxin is greater for the animal cell than for the antitoxin; when they do not the reverse must hold good. Since the absence of receptors also implies immunity it seems a curious incompetence on the part of nature that she could not shape the receptors in such fashion as to be suitable for food only but unsuitable for toxins and bacteria.

"Everybody recognises," says Professor W. H. Welch in his Huxley lecture, "abnormal metabolism as an essential condition in infections. The very point needing explanation is how the bacteria derange metabolism." He then puts forward an explanatory hypothesis, an extension of Ehrlich's theory, to which we must here refer. We are early taught that action and reaction are equal and opposite. It would not, therefore, be surprising if when the cell manufactures antidotes to the bacterium the bacterium were also to elaborate antidotes to the cell—viz., its specific toxin. This theory is very seductive and it affords considerable assistance in the explanation of relapses and re-infections. It explains also the diminution in virulence resultant on growth on artificial media where there is less struggle for existence and the increase in virulence on passage of the micro-organism through an animal. It may be urged that this is merely a survival of the fittest under artificial circumstances. There is some force in the argument, because a virulent toxin-producing bacillus will continue to produce toxin much longer after removal from adverse conditions than would seem to be the case with animal cells. It is a family characteristic much more deeply ingrained than in animal cells. We therefore look forward with interest to the experimental verification of Professor Welch's theory.

THE COMPARATIVE VALUE OF THE MOUTH, THE RECTUM, THE URINE, THE AXILLA, AND THE GROIN FOR THE OBSERVATION OF THE TEMPERATURE;

ESPECIALLY IN REGARD TO TUBERCULOSIS AND TO THE EFFECTS OF EXERCISE AND OTHER CONDITIONS.

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OUR objects have been (1) to investigate the exact relationship of the readings of the thermometer, according as it is placed in one or other of the situations enumerated above, and (2) to ascertain the effects on the temperature of exercise in health, in tuberculosis, and in some other diseases. These observations have extended over the last three years and have been mostly conducted in the Norfolk and Norwich Hospital and in the Mundesley Sanatorium. While the larger number of the patients were suffering from some form of tuberculosis observations have also been made on patients suffering from other maladies and on healthy persons. Specially selected half-minute thermometers were used, which had been previously certified at Kew. It should also be stated that we have adopted the Fahrenheit scale.

ORAL TEMPERATURES.

The time commonly allowed for the thermometer to lie in the mouth is in most circumstances too short to obtain the correct reading. If the thermometer is replaced a further rise will be found to have occurred and as long a time as 30 minutes may in certain conditions be required if the maximum oral temperature is desired. Our practice has been to remove the thermometer and to note the level of the mercury from every two to five minutes, the lips being kept closed all the time. Without shaking the mercury down the instrument is reintroduced until no further rise happens. Or without removing the thermometer the column of mercury may be watched while the instrument is held between the patient's closed lips. In different circumstances we have found that from 30 seconds to 30 minutes are taken by the thermometer in the mouth to reach the maximum. The half-minute thermometer correctly registers within the time specified the temperature of the medium in which it is placed, but a much longer time may be taken to warm up the chamber of the mouth to its full heat from the time the lips have been closed. Having satisfied ourselves that the apparent discrepancies in regard to oral temperatures did not depend upon anything more than the different lengths of time required in varying conditions fully to warm the chamber of the mouth, we attempted to ascertain what these conditions were. We are led to the conclusion that in the following circumstances the interior of the mouth becomes especially cooled and that after their operation time must be allowed for its warming if the correct temperature of the body is to be gauged: (1) the breathing of cool air with parted lips; (2) exercise entailing more rapid respiration, whether of warm or cold air; and (3) the contact of cold with the outside of the cheeks.

The breathing of cool air with parted lips.—If the air respired is cold and the lips have not been intentionally kept closed as long as 30 minutes may be required fully to warm the chamber of the mouth and the thermometer may have to remain *in situ* for this time before its maximum is reached. In the case, for instance, of a patient lying out of doors in winter we have found the mercury slowly continuing to rise until the thermometer had been held between the constantly closed lips for half an hour. In a comfortably warmed room, such as a ward or a consulting-room, we found that the average time required to obtain the maximum oral temperature was ten minutes, supposing the patient not to have kept the lips constantly closed before, when, of course, a shorter time would suffice. In many cases 15 minutes were required, while in some the thermometer reached its full height in five minutes, but if only the usual two or three minutes are allowed it will be almost invariably found that the reintroduction of the instrument is followed by a further rise of the mercury. If the patient has been at rest and in a warm atmosphere and has kept the mouth for at least five minutes rigidly closed one minute may exceptionally suffice for the registration of the correct temperature, as illustrated by the following observation. The mouth was kept closed for five minutes and a thermometer was then introduced for one minute and was found to record 98° F.; this was ascertained to be the correct temperature. Next the mouth was kept open for five minutes and the thermometer now placed under the tongue for one minute only reached 96·8°. Sometimes we have found, also, that when the temperature is subnormal a shorter time is required by the thermometer in the mouth. But in every-day work it will be found that the mouth should be kept continuously closed for ten minutes in order that the correct temperature may be obtained and supposing the patient to be a habitual mouth-breather, or if the mouth has been repeatedly opened, as in coughing or talking, then the average time is 15 minutes during which the thermometer should be held in the closed mouth.

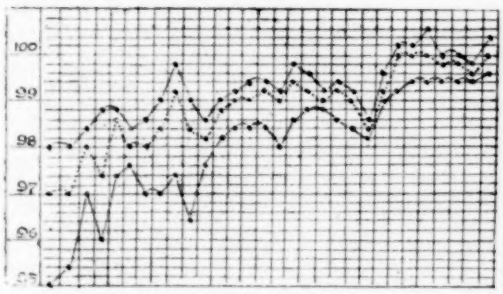
Exercise entailing more rapid respiration, whether of warm or cold air.—Again, exercise usually tends to cool the mouth and after any exertion a longer time must be allowed for the observation of the oral temperature. During exercise the mouth is usually open and the respired air is passing to and

fro more rapidly; moreover, in addition to these two factors there may be loss of heat by radiation from the open mouth. We shall dwell later on the effects of exercise on the temperature and will only state here that it introduces a special fallacy in regard to oral thermometry. The rise in temperature produced by exercise as demonstrated by rectal observation only persists for about half an hour. It takes about the same length of time for the mouth to recover from the specially cooling effects of exercise upon it. So by the time that the closed mouth has gradually warmed itself after the loss of heat consequent on the rapid passage to and fro of air through parted lips and on radiation, the body heat has generally commenced to lessen.

The contact of cold with the outside of the cheeks.—The mouth may also be cooled by the contact of cold directly with the cheeks. This is illustrated by the following experiments conducted by one of us (S. G. C.). The oral temperature was first taken and was found to register 98·4° F. A rubber bag filled with ice was then applied to the left cheek and at the end of three minutes the temperature of that side of the mouth was found to have fallen to 97·8°, at the end of ten minutes to 95°, and at the end of 15 minutes to 94°. On the opposite side of the mouth the temperature remained 98·4°, while it dropped 4·4° on the side to which the cold was applied. The ice-bag was then removed and the temperature of the left side of the mouth was observed at frequent intervals. During the first 15 minutes it rose from 94° to 97·6° and at the expiration of one hour it had reached 98·2°. The same bag was then filled with water as hot as could be borne and was held against the left cheek again. At the end of three minutes the temperature rose to 99·4°, after ten minutes to 100·4°, and after 15 minutes to 100·6°. On the opposite side of the mouth the temperature only moved from 98·4° to 98·6°. The application of heat was then discontinued and the temperature was recorded at frequent intervals. During the first five minutes it fell from 100·6° to 99°; after 20 minutes the thermometer registered 98·2° again. It will be seen, then, that the effect produced by cold was greater than was that produced by heat, but the difference between the temperature of the ice-bag and that of the mouth was much greater, of course, than the difference between the temperature of the hot water and that of the mouth. The practical point is that the contact of cold against the cheek introduces a fallacy in regard to the oral temperature unless very special care is taken to allow enough time for the effect of the cold to be counteracted. Another simple experiment illustrates the same fact. The oral temperature having been observed two individuals took exercise in cold air and their mouths then showed a fall of temperature. The same exercise was afterwards taken with the whole face enveloped in a mask of wool with holes for nose, mouth, and eyes, and the subsequent oral temperature registered one degree higher than in the former experiment—that is, the mask had to some extent counteracted the depressing effect of cold air on the oral temperature.

Chart 1 demonstrates the amount of error which may be encountered unless the full time is allowed for the thermometer in the mouth. The difference between the readings for five minutes and for 15 minutes might alter considerably the complexion of a case of pulmonary tuberculosis.

CHART 1



Oral temperature readings of one patient taken at the end of five, ten, and fifteen minutes. The top line shows the thermometer held in the mouth for fifteen minutes; the middle dotted line indicates ten minutes; and the lowest line five minutes.

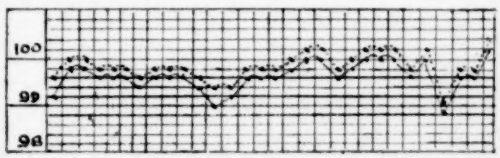
Dr. W. S. Lazarus-Barlow[1] found that after drinking hot beef-tea the oral temperature rose to 100° F., and that at the end of 40 minutes it was still 0·4° higher than before the beef-tea was taken. He also examined the effect of inhaling cold air. The oral temperature having been ascertained to be 97·6°, air at a temperature of 30° was breathed with open mouth for 45 seconds; the oral temperature had then fallen to 96·8° and seven minutes elapsed before it again reached 97·6°. Finding, too, that reading aloud for one minute reduced the oral temperature 0·3°, Dr. Lazarus-Barlow concluded that before taking the temperature the mouth should have been kept closed for ten minutes. We have found that local diseases may raise disproportionately the oral temperature; in several cases of tonsillitis and in one of sarcoma of the tonsil the temperature of the mouth exceeded that of the rectum by half a degree or more.

The effect on the oral temperature of substances which influence the capillary circulation in the mouth must also be briefly referred to. A fall of 0·5° in the oral temperature resulted from holding a carefully warmed solution of adrenalin chloride in the mouth for a minute. Half an ounce of alcohol held there for the same time caused a rise of 0·5°. Amongst several drugs which raised the oral temperature, presumably by dilating the capillaries, we found menthol one of the most active. The sucking of a menthol lozenge for half a minute caused a rise of 1·6°. The effect of smoking is usually to cause a very slight elevation in the oral temperature, but if it is accompanied by very frequent opening of the lips a fall may occasionally be noticed.

RECTAL TEMPERATURE.

The maximum is reached in from one to five minutes when the thermometer is inserted in the rectum. To be sure of obtaining the correct reading a good rule is to allow five minutes, more than this we have never found necessary.

CHART 2.

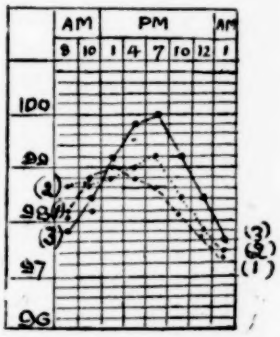


Shows three and five minutes' readings of rectal temperature in one patient.

We shall show later that the rectal temperature of rest and that taken immediately after any movement are totally different. Where precision, therefore, is desirable this point should be noted.

Chart 3 illustrates the diurnal variations of the rectal temperature in health according as the day is spent wholly in bed, sitting at a desk, or constantly on the feet but without active exercise.

CHART 3.



Illustrating rectal temperature in a healthy man. (1) Whole day spent in bed. (2) Whole day spent in chair. (3) Whole day spent on the feet without active exercise.

[1] THE LANCET, Oct. 26th, 1895, p. 1034.

URINE TEMPERATURE.

To obtain the maximum elevation of the mercury from two to five ounces of urine must be voided over the bulb of the thermometer, which must be held close to the penis so as to prevent cooling of the stream by its traversing too much air. Using the rectal temperature as our control and allowing for the difference which normally obtains between the temperatures observed in the rectum and in the urine, we find that the careful passage of five ounces of urine over the thermometer gives the correct reading in the majority of cases, but about once in every 20 observations we have met with a curious discrepancy between the rectal and urine temperatures which we are unable to explain. We have tried to use urine received into a vessel previously warmed to about the temperature of the body for the measurement of the temperature, but have always failed thus to get a correct reading.

AXILLARY AND INGUINAL TEMPERATURES.

The time required to obtain the maximum readings in these situations varies widely. Out of some hundreds of observations we have obtained no further rise of the thermometer after the expiration of ten minutes in some half-dozen instances. In the remainder the maximum has been reached usually in from 15 to 50 minutes, but it has been repeatedly noted with children that a gradual rise has continued to occur until after the thermometer has been over one hour *in situ*.

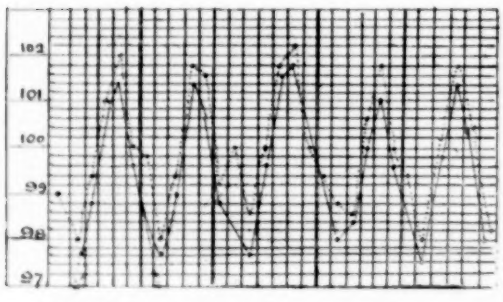
A COMPARISON OF THERMOMETRIC READINGS OBTAINED IN DIFFERENT SITUATIONS.

Some 2000 observations have been made for the purpose of estimating the relationship of the temperature of the various sites used for clinical purposes. The rectal temperature is taken as the standard and those obtained in the mouth, the urine, the axilla, and the groin are contrasted with it.

Oral and rectal temperatures.—We have already stated that exercise, though it raises the general body heat, tends to cool the mouth and we shall again have occasion to dwell on this point. In the following observations on the comparative readings of the thermometer placed in the mouth and in the rectum it must be understood that the disturbing influence of exercise has not been permitted to occur and that sufficient time was allowed for obtaining the maximum oral temperature, the length of time depending on circumstances already set forth. We would say that the rectal temperature is on an average 0·4° higher than that of the mouth. The disparity between the oral and rectal temperatures, according to our observations, is less than that generally held to exist, but we maintain that if care is taken to exclude all sources of fallacy the oral temperature will be found to correspond closely with the rectal temperature. Moreover, this correspondence is a fairly exact one, for in our numerous observations of comparison the limits of variation between the rectal and oral temperatures are 0·8° and 0·0°. We would, however, repeat that the correspondence depends on care being taken to obtain the true maximum oral temperature and to exclude observations where the influence of exercise may have obtained.

Chart 4 shows that the correspondence between the oral

CHART 4.



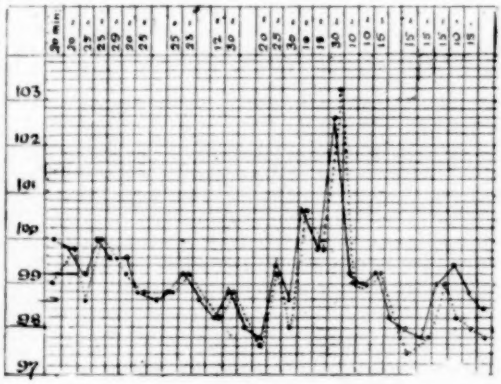
Showing close correspondence of oral and rectal (dotted lines) temperatures in a case of tuberculous peritonitis confined to bed.

and rectal readings may be even more close than we have stated, largely depending on the patience with which the temperature in the mouth is taken. In this case 70 observations of comparison were taken with an average difference of 0·1° between the oral and rectal temperatures.

The urine and the rectum.—150 observations of comparison have been made of temperatures of the urine and rectum and the average excess of the rectal temperature over that of the urine is 0·2°, the temperature of the urine showing the same excess over the oral temperature. At the same time we consider the urine untrustworthy for the observation of temperature, for in about ten instances there has been noted a complete want of correspondence, and for some mysterious reason the thermometer carefully placed in the stream of urine has given a reading of a degree or more below that of the rectal instrument. It is to be understood that 0·2° represents the average excess of the rectal temperature over that of the urine under conditions of rest. If exercise has been recently taken there is a greater divergence, though, as we shall presently see, to a lesser degree than between the rectal and oral temperatures of exercise.

The groin, the axilla, and the rectum.—Out of 200 observations the mean variations of readings taken in these situations were as follows. The rectal temperature was 0·6° higher than that of the groin and 0·9° higher than that of the axilla. These averages are given for what they are worth, but we admit that much depends on the observer having the patience to coax the thermometer up to its maximum by allowing it to remain in the axilla or the groin sufficiently long—for perhaps an hour or more. The agreement is more close when the temperature is raised than when it is depressed. Chart 5 shows how close the correspondence may be.

CHART 5.



Showing close correspondence of inguinal and rectal (dotted lines) temperatures of a child confined to bed with diphtheria. The length of time which is required to obtain the inguinal reading is given.

THE EFFECT OF EXERCISE ON TEMPERATURE.

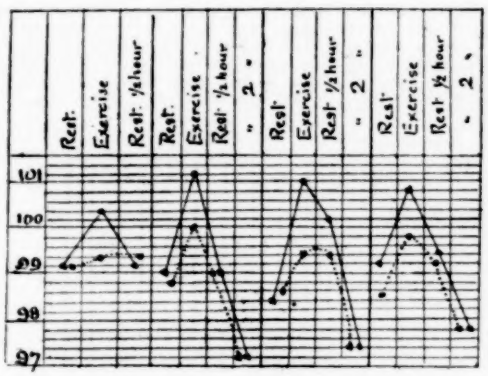
The sanatorium treatment of consumptives, implying as it does the detailed study of every symptom presented by the patient, has familiarised us with the rise of the thermometer noted to occur in them after exercise. In most sanatoriums a point is made of taking the patient's temperature on his return from walking and considerable importance is attached to it. On this record certain directions in the way of treatment are based, but often we venture to think with an erroneous conception as to the nature of this exercise reaction.

Exercise reaction in health.—During the last two years we have made almost daily observations on the temperature of ourselves and others in various conditions and we feel warranted in making the statement that the effect of exercise on the temperature of a healthy man has been generally under-estimated. A very slight amount of movement only is required to produce an appreciable rise of the mercury, while with more exertion we have noted a rise of as much as three and a half degrees. It will simplify the description of our observations on the exercise reaction in health if we say at once that in the precise study of temperature three conditions should be recognised: 1. Absolute rest, that is,

the relaxation of all the large muscles whether in lying down or sitting and for a period of one hour. In this condition the temperature is actually depressed. 2. Standing without taking active exercise, which tends to raise the temperature slightly. 3. Active exercise which distinctly raises the temperature.

The fluctuations of temperature consequent on exercise and repose can only be reliably observed in the rectum. We have already stated that while exercise is being taken the mouth tends to be more opened and the breathing to be quickened, to say nothing of the possible cooling of the mouth by radiation and conduction. Depending on the parts played by these factors the oral temperature may be unaffected, it may be raised, or it may be depressed. In warm weather, when the mouth is not cooled by the conduction of cold through the cheeks, the oral temperature can usually be slightly raised by exercise taken with the mouth forcibly closed and less constantly it is raised in warm weather without this forced closing of the lips. On the whole our observations show that in cold air exercise usually produces no rise of the oral temperature and may be accompanied by an actual depression, while when the air is warm a slight rise is usually manifested especially if the exercise has not accelerated the breathing markedly, but in no case does the oral temperature of exercise bear the correspondence that obtains during rest to that of the rectum. The cases, however, in which some rise does occur in the mouth, together with the fact that the temperature of the urine always shows a rise after exercise, demonstrate that the raised rectal temperature of exercise is not due to any local disturbance peculiar to the lower bowel. In mild weather a moderately hard bicycle ride of half an hour was taken which caused slight perspiration. The rest temperature before starting was found to be—rectal, 98·8°; urine, 98·5°; and mouth, 98·3°. At the end of the ride the temperatures were—rectal, 100·4°; urine, 100°; and mouth, after holding the thermometer for 10 minutes, 98·4°. Replacement, however, of the thermometer in the mouth was followed by a further rise, which continued little by little until, at the expiration of 30 minutes, the oral temperature stood at 99°. Half an hour, therefore, was taken by the oral chamber to recover from the depressing effects on its temperature of the exercise and by this time the general elevation was subsiding, for the rectal temperature had dropped to 99·5°. Chart 6, from a case of tuberculosis, shows the different effects of exercise on the oral and rectal readings.

CHART 6.



Oral (dotted lines) and rectal temperatures of patient with tuberculosis showing approximation under condition of rest and divergence of the two readings after exercise.

The effect on the temperature of the slightest effort—that involved by changing the lying down position to standing up—has been investigated in eight healthy persons, on whom repeated observations have been made. In six of this number a very slight rise constantly occurred, the nature of which may be described by giving a single typical instance. On first awaking in the morning the oral temperature was 97·8° and the rectal 98·2°; after lying still for a quarter of an hour these readings were found to be unchanged. The subject of the experiment then stood out of bed, but did not walk, and at five minutes' intervals the rectal temperature was found to be 98·4°, 98·6°, and 98·8°, for the next 15 minutes it was stationary, but at the end of that time, or half an hour after first getting up, it had risen to 99°.

Meanwhile the oral temperature rose from 97·8° to 97·9° in the first 15 minutes. This experiment was repeated in the latter part of the day with the same result, and the converse was also tried. While standing still the rectal temperature was 98°; half an hour's complete repose in bed lowered it to 97·4°.

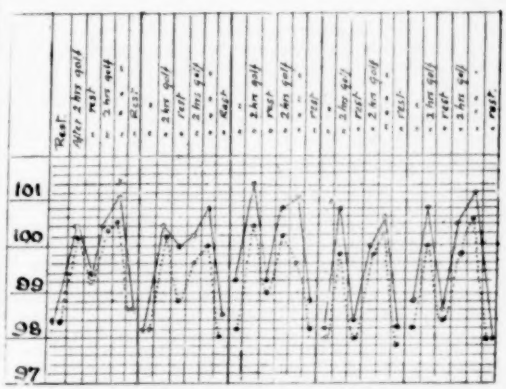
From these observations it would appear that the temperature is distinctly susceptible even in health to very slight degrees of muscular effort. The change from the horizontal position assumed in bed to that of standing may involve a rise of 0·8° and the converse may cause a fall of 0·6°. The average rectal rise on standing for 15 minutes in six healthy men was 0·3°. But it must be understood that the elevation of temperature due to the slightest forms of exertion are only manifest if the individual has previously rested completely and has thus secured the depressed temperature of repose.

Passing now to the consideration of the effects of more active exercise on the temperature in health our observations show that a distinct rise constantly occurs, the degree depending on the severity and duration of the effort and on the individual peculiarities. As we have records of some hundreds of observations bearing on this subject we will summarise them by giving examples which are fairly typical of our total results.

In health walking at an ordinary pace for a quarter of an hour produces a rise of about half a degree in the rectal temperature. Thus the rectal temperature after a period of an hour's rest was 99·1°, a quarter of an hour's moderate walk was then taken and the rectal temperature rose to 99·6°. After resting again the temperature took 25 minutes to resume its former level of 99·1°. The oral temperature was 98·5° before starting and after the walk it was again found to be 98·5°, 15 minutes being required by the thermometer in the mouth to reach this point.

A round of golf representing about two hours' walk caused an average rise of 2·1° in the rectum and 1·7 in the urine; a second followed by a third round, even though taken without an interval of any rest, only caused a further average rise of 0·5°. From this and from other records it will be seen that the exercise reaction commences abruptly but that the continuance of exercise causes a more gradual further rise of temperature (see Chart 7).

CHART 7.



Rectal temperature and that of urine (dotted line) showing effect of a round of golf followed by rest and of a second and third round without intervening rest.

The effect of a game of tennis on the rectal temperature has been observed in a large number of individuals. After playing for an hour a rise of from one to three degrees has been constantly noted.

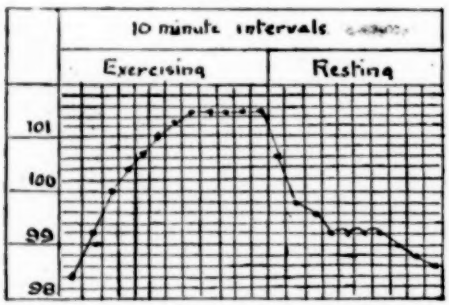
We have also tried bicycling and have taken the rectal temperature at stated intervals during a moderate ride. Before starting, for instance, the rectal temperature was 99°, after five minutes it rose to 99·4°, after another

period of 20 minutes it rose to 100°, after a second period of 20 minutes to 100·2°, and after two hours to 101°, the exact degree of rise depending apparently on differences in the susceptibility of different persons and on the severity of the exercise. Thus a rise of 3·5° has been obtained by three hours' hard bicycling.

The amount of elevation of temperature produced by exercise is much greater according to our observations than that commonly described. But other observers have frequently used the mouth, which is valueless for the detection of the temperature of exercise, or if the rectum has been used the evanescent nature of the rise has not been allowed for. We are satisfied from the agreement of a very large number of observations that a rise of the rectal temperature will be constantly found if it is taken immediately after exercise.

Chart 8 records the rectal temperature of a healthy man taken every ten minutes while he walked briskly at the rate of over four miles an hour. It will be observed that the temperature rose abruptly during the first part of the walk, but after reaching 101·5° from an hour's hard exercise it remained at this level during 40 minutes' continued walking. On resting the temperature fell abruptly at first and more gradually during the latter period of the rest.

CHART 8.

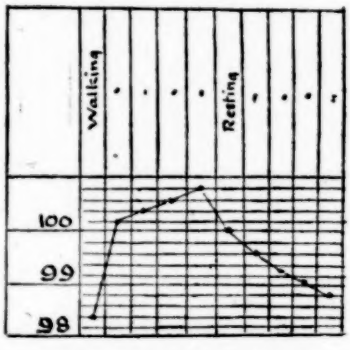


Rectal temperature of a healthy man walking fast observed every ten minutes. To interfere as little as possible with the exercise only one minute was allowed for each reading. The subsequent rest temperatures are also taken every ten minutes.

The effect of exercise on the temperature in tuberculosis.—Repeated observations have been made upon ten cases of tuberculosis to ascertain the amount of their reaction to the slight effort entailed in assuming the standing posture. With only one exception a distinct elevation of the rectal temperature has been noted; occasionally as much as a degree's difference has separated the rectal temperature of rest and that of standing. It is necessary again to state that the patient must have rested completely beforehand in order that the reaction to standing may be discernible. A patient with arrested pulmonary tuberculosis and wholly free from fever found that his rectal temperature while lying down was 98·9°; he then stood quietly by his chair and the temperature taken each succeeding five minutes read 99·3°, 99·4°, 99·7°, and 99·9°. A rise of one degree, then, had occurred as a consequence of merely standing for 15 minutes. It remained stationary at this point and the patient then resumed the horizontal posture when the temperature was ascertained to have fallen again in ten minutes. As regards the pulse, its frequency was 68 during rest and on standing it rose at once to 80, but while the temperature steadily increased until 15 minutes had elapsed, the pulse showed no further change. Taking all our observations on the reaction of the rectal temperature to standing the average rise in tuberculosis was 0·5°, the limits being 1·0° and in one case *nil*.

Reaction to more active exercise in tuberculosis.—50 observations have been made on the effect of a walk of a quarter of an hour in cases of non-febrile tuberculosis. The average rectal rise of temperature was 1·0°. The smallest elevation was 0·6° which occurred in a case of pulmonary tuberculosis and the greatest was 2·2° in the case of a boy suffering from white swelling of the knee and who walked easily on crutches. Lupus and peritonitic, pleural, and glandular tuberculosis were included in this list and their behaviour did not distinguish them from cases of pulmonary tuberculosis. A second walk of a quarter of an hour increased the rise by another 0·5° on an average. Beyond this the effect of further exercise was difficult to generalise upon; in some cases no further rise of temperature would occur until an hour's walking had been done, when an increment of 0·2° might be noticed; in others such an elevation might be observed at shorter intervals. It did not appear that the absence or presence of fatigue determined the amount of elevation nor necessarily the general condition of the patient. The more robust invalid often showed more susceptibility in his temperature to the slighter degrees of exercise than did the weaker individual. In all, however, we observed that with the commencement of exercise the temperature rose rapidly, and that with continued exercise the ascent either ceased altogether or anyhow became much more gradual. Though their reaction to the slight effort of standing or of walking for such a short time as a quarter of an hour did not distinguish the favourable from the unfavourable case of pulmonary tuberculosis, we think that the behaviour of the temperatures of the two classes does differ when exercise is taken for longer times. The effect of walking for an hour at the pace of about three miles an hour has been investigated in the cases of nearly 100 patients affected with pulmonary tuberculosis, on most of whom daily observations were made for many weeks. We would say that the ordinary amount of elevation for this length of walk is 2·0°. Patients who were progressing favourably and whose subsequent histories declared them to have successfully subdued their disease usually manifested a rise from about 99° while resting to about 101° immediately after a walk of one hour. The few patients who habitually showed a smaller rise than this, perhaps of only one degree from an hour's walking, were the most favourable cases. They were cases of very limited disease and especially they were cases with a constantly normal rest temperature. Our patients with apyrexial pulmonary tuberculosis may be divided into two classes, those who have barely conquered their fever and are always on the verge of becoming more or less febrile and those whose tuberculosis may have been unaccompanied by fever at all and who appear to be secure against this manifestation. The latter group were distinguished by the small amount of their reaction to prolonged exercise In fact, a walk of an hour might cause a rise of only 0·2° above that noted at the end of a quarter of an hour. In all cases the amount of elevation of temperature was usually more proportionate to the violence of the exercise than to the length of it. Mere sustained effort as in slow hill-climbing appeared occasionally to cause a lesser rise of temperature. The reaction to exercise of a patient whose disease was slight and whose rest temperature had recently become normal is illustrated in Chart 9; the readings are taken at ten minutes' intervals and show the rapid rise on commencing exercise and the more gradual rise with its continuance.

CHART 9.



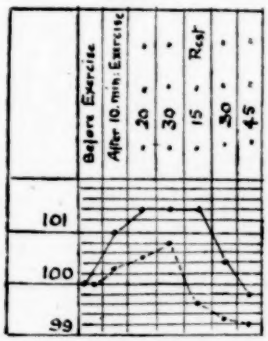
Ten minute readings of rectal temperature during slow walking in a case of pulmonary tuberculosis.

By way of contrast observations have also been made on the subjects of other diseases. We have 28 records of the rectal temperature on standing after lying down in the cases of patients suffering from various ailments such as chlorosis,

bronchitis, cirrhosis of the liver, cancer, dyspepsia, and heart disease. The results have been curiously inconstant, no rise occurring in half the number and an average rise of 0·4° being noted in the remainder. A girl suffering from chlorosis, for instance, on one occasion showed a rise of 1·4° on standing and another patient similarly affected was uninfluenced by the same procedure. A large number of observations have been made on the effect of exercise for a quarter of an hour on the sufferers from various diseases. Again the effects were inconstant, for in one-third of the patients no rise was observed, while in the remainder there was an average rise of 0·4°. In the case of a patient convalescent from bronchitis, who certainly walked particularly briskly for a quarter of an hour, the rectal temperature was elevated by 1·9°, whereas a man who was debilitated by cirrhosis of the liver walked less sharply for the same length of time without affecting his temperature at all.

In the manifestation, then, of an exercise reaction there is nothing peculiar to tuberculosis; the same kind of rise of temperature occurs in health and in other diseases. Generally speaking, however, we have found that the patient with tuberculosis is characterised by the constancy of his reaction to the slighter degrees of effort and by the fact that this reaction

CHART 10.



A patient with pulmonary tuberculosis and a healthy man (dotted lines) found their rectal temperatures agreed. They then walked side by side and observed the temperatures each ten minutes and again during rest.

usually exceeds that of health or other diseases (see Chart 10). With more prolonged exercise the reaction of the tuberculous patient is less different from that of the healthy individual and this applies especially to the favourable cases. It is important to bear in mind that an elevation of temperature normally occurs after exercise and that from 30 to 60 minutes must elapse before the reaction disappears. We have, however, heard of sanatoriums where a rule existed that if a patient's temperature exceeded 100·4° on his return from a walk such patient must in future be confined to his couch. A bare record of the rectal temperature is valueless for exact guidance unless information is also furnished as to the conditions under which the observation was made.

These points have a bearing on the vexed question as to whether the rectum or the mouth should be habitually used for the observance of the temperature in tuberculosis.

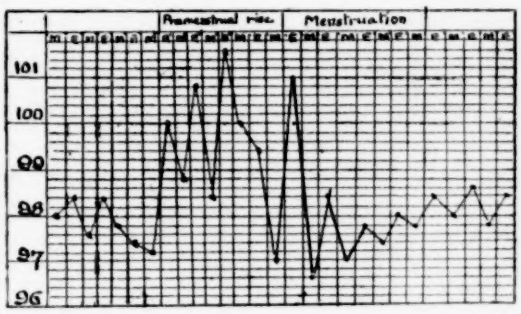
—	Reaction to standing.		Reaction to 15 minutes' walking.		Reaction to one hour's walking.	
	Percentage in whom rectal temperature rose.	Average amount of rise.	Percentage in whom rectal temperature rose.	Average amount of rise.	Percentage in whom rectal temperature rose.	Average amount of rise.
Health	75	0·3°	87·5	0·5°	All.	1·0°
Tuberculosis	99	0·5°	All.	1·0°	All.	2·0°
Other diseases ...	50	0·4°	66	0·4°	—	—

Personally we have not seen reason for attaching much importance for practical purposes to the rectal temperature during the hour that immediately succeeds exercise and by the end of that time the temperature can be reliably gauged in the mouth. For general use we submit that the temperature may satisfactorily be taken in the mouth, provided that due regard be paid to the conditions already set forth. We would not, however, by any means under-estimate the value of the rectal temperature for purposes of control or occasional observation of the exercise reaction. We present in tabular form (see previous column) a summary of our observations on the effects of different amounts of exertion in health, tuberculosis, and other diseases.

REACTION TO MENSTRUATION.

On looking through the charts of 34 women under treatment at the Mundesley Sanatorium for pulmonary tuberculosis we find that in 18 a distinct rise of temperature preceded each menstrual period. These observations were made in the mouth and the average amount of elevation was 0·5°; this affected the morning and evening records and was spread over an average period of six days, ending on the day which preceded the onset of menstruation or running on into the first or second day of the period. This pre-menstrual rise of temperature was most declared in patients whose tuberculous lesions were either very slight or had become satisfactorily arrested and whose temperatures were in either case running a normal course (see Chart 11). In patients whose temperatures ranged higher the menstrual period produced no appreciable change. While more than half of our patients manifested a distinct though slight elevation of temperature before menstruation set in, we only accidentally observed any rise to occur during the establishment of the flow or after it. For the sake of comparison the temperature charts of 50 women admitted successively into the Norfolk and Norwich Hospital for various maladies other than tuberculosis have been examined and in only eight of the number was there any regular rise observed to occur before menstruation.

CHART 11.



Unusually marked premenstrual rise of temperature in a patient with tuberculous glands.

The effects on the temperature of high-frequency electric currents have been tested in the cases of eight patients treated by Dr. R. J. Mills. Six of his patients had pulmonary tuberculosis and the remaining two had lupus vulgaris. We are indebted to Dr. Mills for allowing one of us (S. G. C.) to record the temperature of these patients before and after the application of the electricity and to compare the effects with those obtained in two healthy persons. All the eight patients manifested a rise of from one to three degrees as the result of ten minutes' application of the high-frequency current and this elevation persisted at the end of 15 minutes' rest. With two healthy persons there was a rise of only from 0·4° to 0·6° after the same application. The administration of galvanic and faradic electricity to patients with tuberculosis caused no rise of temperature.

A very brief reference may be made to a few observations that have been carried out in animals. Mr. C. Hedworth Golledge was kind enough to test the effect of exercise on the temperature in 12 cows. The temperatures of the animals having been taken while resting, they were made to walk with occasional running for ten minutes, at the end of which

time their temperatures were again observed. In the case of 10 out of the 12 an elevation took place which varied from 0·2° to 1·4° and which averaged 0·8°. Many of these cows presented cough and loss of flesh and were suspected of having tuberculosis, but unfortunately none of them reacted to tuberculin. At the same time we must state that the amount of reaction to exercise did not correspond exactly with the manifestation of suspicious symptoms. A couple of dogs have also been experimented on. Their rest temperatures having been ascertained to be 101·8° and 101·4°, they were taken for a run of ten minutes and their temperatures then registered 104·2° and 104° respectively. The average of five observations on the effects of running for ten minutes on the temperature of these dogs showed a rise of 2·1°. With ten minutes' rest the normal temperature was regained. The temperatures of these animals appear to be particularly easily affected, for a rise of 0·6° occurred on making a dog stand up on its hind legs for ten minutes.

The subjects with which we have imperfectly dealt in the preceding pages afford a field for more complete investigation.[2] The present contribution is little more than a collection of numerous observations, largely taken for us by the nurses of the Norwich Hospital and Mundesley Sanatorium and by Mr. W. J. Fanning, late resident medical officer of the Mundesley Sanatorium. We are under a great obligation to them for their labour.

Norwich.

MEDICO-LEGAL POST-MORTEM EXAMINATIONS.[1]

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WHEN I was asked to read a paper before the Medico-Legal Society it was not my intention to take up a subject of such a general nature as that indicated by the above title. I proposed merely to give an account of some anomalous and uncommon post-mortem conditions and it was in deference to the suggestion of the joint secretary, Dr. W. McCallin, that it would be advisable to have a paper admitting of more general discussion that the present subject was chosen. It is with some feeling of trepidation that I approach, in a society of experts, a subject apparently so simple and which has been so often discussed by others, more especially since I am fully conscious of having nothing original to add to what has been already frequently spoken and published. A perusal of the admirable address which the President delivered at the inaugural meeting of the society, however, has given me confidence to some extent, since I find among the questions which he touches upon and suggests for our consideration that which I shall now endeavour to deal with. At the same time, also, when we remember that this society is only commencing its career—and I trust that it will be a long and useful one—it is perhaps well that our early discussions should deal with elementary facts and fundamental principles, so that we may endeavour to arrive at a clear understanding amongst ourselves as to any matters which are open to doubt and by this means form a solid foundation from which we may attempt to exert a beneficial influence upon the judicial procedure and practice of the country and likewise build up for ourselves a superstructure of sound and progressive knowledge of the science in which we are interetsed. It will only be possible for me this evening to refer briefly to some of the many questions which naturally arise in a discussion of the whole subject of medico-legal post-mortem examinations, and I purpose, therefore, to consider (1) in what cases should a post-mortem examination be performed; (2) who should perform it; and (3) the procedure and methods which should be followed in such examinations.

IN WHAT CASES SHOULD A MEDICO-LEGAL POST-MORTEM EXAMINATION BE PERFORMED?

It is hardly necessary for me to state that the cases of death which I have in mind are those which ought naturally to come under the cognisance of the coroner (or the procurator-fiscal in Scotland)—viz., cases of sudden or unexpected deaths, cases of deaths from violence, and those cases in which the medical attendant is unable, or refuses, to give a certificate.

We are no doubt all agreed that the law as it at present stands in regard to the preliminary investigation of such cases leaves much to be desired. A system which leaves to the registrar the duty of setting the machinery of investigation going, and an investigation carried out often solely by an official (the coroner's officer) who has neither legal status nor in many instances the qualifications necessary for the efficient discharge of such an important and responsible task, cannot be regarded as satisfactory or as one which inspires confidence in the methods for detecting crime and administering justice. Nor can it be deemed a satisfactory system which places on the shoulders of the coroner the responsibility of deciding on unofficial and frequently superficial investigation, firstly, whether there shall be an inquest; whether, secondly, when a person is found dead it is necessary for a medical man to inspect the body; and, lastly, whether a post-mortem examination is required to determine the cause of death. The coroner is not responsible for the objections we take to the system. He merely carries out the law, and does so, as a rule, in an efficient manner. We cannot, however, shut our eyes to the evils of a system so closely related to the public welfare and the administration of justice in which the element of chance plays such a large rôle. Authorities well able to form an opinion have stated that under such a system numerous crimes must every year pass undetected and it is not difficult for us to believe these statements when we consider the statistics of "uncertified" deaths and read in the papers accounts of inquests on bodies found in circumstances which might well arouse suspicion and yet in which no medical evidence is adduced as to the cause of death. In no other country boasting of a civilisation even approaching that of the United Kingdom is so great a laxness in the investigation of the cause of death in such circumstances tolerated. In France, in Germany, and in Austria no person found dead could be buried without the body being at least viewed by a qualified medical inspector, and it is a matter for wonder that in this country, where so much has been done by legislation to safeguard and to prolong human life, more stringent measures have not yet been enacted in regard to the medical examination of persons found dead in order to protect the community from the possibility of criminal violence.

What is required, however, in a large proportion of the cases which are the subject of inquests is not merely an inspection of the body by a medical man but a post-mortem examination. By no other means is it possible to exclude death from violence The external inspection of a body can seldom give a true indication of the cause of death in cases where persons are found dead or even entitle a certificate of death from "natural causes" to be given should the coroner hold the view that his duty does not require any more specific statement. History teaches us that the greatest crimes have often occurred where they were least suspected and where at first sight the circumstances and the external appearance of the body afforded no indication of the true nature of the case. Many cases illustrating the unreliability of an external examination in cases of violent death will recur to all of us, but I will instance the following from my own experience, in all of which death might have been due to murder and in which a mere inspection of the body afforded no clue to the real cause of death. An old man was found lying dead in bed one morning having apparently died during his sleep. The face was placid and pale and there was nothing to indicate that death was due to other than natural causes. As the dwelling-house was a small one the body was removed to the mortuary and there, on making a post-mortem examination, it was found that he had taken carbolic acid. There was no smell of the acid in the room and no bottle was found near the body, although one which had contained the substance was afterwards found in the house. Even in the mortuary the odour was not noticed until the stomach was opened and its typical appearance suggested the poison. There was no corrosion of the lips—in fact, there was nothing externally to indicate the nature of the case.

The same difficulty may arise in connexion with other

[2] Since forwarding this paper for publication our attention has been called to the interesting communication by M. S. Pembrey, C. J. Arkle, P. R. Bolus, and H. C. Lecky in Guy's Hospital Reports, vol. lvii., 1902, on the Effect of Muscular Work upon the Temperature of Man.

[1] A paper read before the Medico-Legal Society on Dec. 9th, 1902.

poisons which one might naturally expect to be able to recognise by their odour, even without opening the body. A man travelling in the train from Aberdeen to Edinburgh was found at Dundee to be apparently asleep in the compartment. He was supposed to be under the influence of alcohol and the officials at Dundee therefore telegraphed to the ticket-collector at Edinburgh to get his ticket on arrival there. When the compartment was entered the man was found still sitting in the same position but was evidently in a dying condition. He died before reaching the infirmary, to which he was at once taken. There was no odour or bottle noticed in the carriage and as a result of the most careful inspection of the exterior of the body nothing was found to suggest death from other than a natural cause. The man was known to be addicted to drink and therefore death was supposed to be due to the effects of intemperance. The procurator-fiscal only demanded a certificate as to the cause of death—i.e., a report based on the external examination of the body. Having received, however, permission from the friends to make a complete examination, owing to the fact of the man's life being insured, I detected in the stomach a faint odour of prussic acid and on applying tests I was able to verify the presence of this poison. How and where the poison was obtained remains a mystery, but in all probability the case was one of suicide.

I could give many instances of death from direct violence in which there were either no external signs of injury or in which these were so slight as not to attract attention. It is, for example, by no means uncommon to find extensive fractures of the skull, fractures of the ribs and sternum, or ruptures of various organs of the chest and abdomen produced by direct violence, without there being any external wound or mark; indeed, I can recall the case of an old man who was thought, after an inspection of the body, to have died from heart failure and old age but who was subsequently found to have shot himself in the mouth with a small revolver. There were no external evidence of the cause of death in this case, no alteration of the features, and no effusion of blood, and no weapon was found until some days after the event. Similar cases are occurring every day throughout the country and it is not therefore difficult to understand how, under the present system of imperfect investigation and with medical evidence based on an external examination only, crimes may pass undetected.

Naturally the practice of coroners varies in regard to the cases in which post-mortem examinations are thought to be necessary and the opinion which many used apparently to hold that a medical man by mere inspection of a body should be able to say what the person died from is becoming modified. At the same time, I maintain that there should be greater uniformity of procedure on this question throughout the country. The initiative must come from the Government, since it is a question affecting not a locality but the whole State. I would suggest that the first step towards uniformity and greater efficiency should be the promulgation of a code of regulations applicable to all coroners, defining the procedure to be followed in various circumstances and more especially enjoining that no body shall be buried without its having been previously inspected by a competent medical inspector, but also requiring that a post-mortem examination shall be held in all cases of persons found dead, no matter whether the body presents indications of violence or not, in which positive and direct evidence is not forthcoming from reliable and impartial witnesses, or from the circumstances of the case, that the deceased died from natural causes.

WHO SHOULD PERFORM THE MEDICO-LEGAL POST-MORTEM EXAMINATION?

Let us now consider the question of who should make the medico-legal post-mortem examination. Should it be *any* medical practitioner—the one who happens to live nearest at hand; the house surgeon of the hospital to which the deceased was removed and who may just have received his qualification to practise; the practitioner who has been attending the deceased, who may be an excellent physician but possibly has never made a post-mortem examination in his life before; or should it be a person of recognised experience and capacity to perform the duty irrespectively of other considerations? It would be ludicrous if it were not such a serious matter to reflect that in this advanced age and in an enlightened and humane country the law still permits *any* medical practitioner to be summoned to make a post-mortem examination without any regard to his knowledge, his previous experience, or his capacity to fill the duty thus imposed upon him. In other words, while we all when ill try to obtain the best advice, seek the man who by devoting himself to special study has best qualified himself in a particular branch of medicine, in order to treat our case, or to operate upon us, any medical man, no matter what is his qualification or his experience, is good enough when the question for decision is merely one affecting the liberty, or it may be the life, of another, although the points at issue are no less difficult to decide and require equally for their elucidation special study and experience. No question is necessarily asked by the judicial authorities as to the medical practitioner's fitness or knowledge of the duty thus required, or, indeed, whether he has ever given any attention at all to forensic medicine, apart from the small amount of information required in order to pass the examination of the medical curriculum.

That this view is not an exaggeration must be known to anyone who reads the daily papers, where we continually see in cases of the most serious nature, entailing on the accused party prolonged terms of imprisonment or the capital sentence, evidence given on extremely nice points of forensic medicine by gentlemen who—without casting any reflection upon them as excellent medical men—are neither competent from experience or knowledge of the subject to decide the questions at issue. Numerous examples could be given to illustrate the truth of this contention and cases could be easily recalled in which there can be little doubt that serious miscarriage of justice has resulted from the incompetency and defects of the medical evidence. I will relate one case from my own experience, with reference to this point, which is but a type of what occurs every day under the present system. A woman died, it was believed, as a result of septic infection conveyed by a midwife who had a short time before infected two other puerperal women with fatal results. The coroner was informed of the circumstances of the third case and of the patient's death and he ordered the medical man who had been called in to see the woman before death to make a post-mortem examination. I obtained permission to be present and I was greatly surprised when this medical man informed me that he had never made a post-mortem examination before—a fact which was easily discernible from his methods of operation—and yet a woman was committed for trial at the assizes on a charge of manslaughter on this gentleman's evidence. Even if the case had been a perfectly clear one—of death from wounding, for example, in which little depended on the post-mortem examination—the circumstance would have been bad enough and the choice which the coroner made would have been inexcusable; but in a case such as I have related, where everything depended upon the determination of the exact cause of death—and that from a cause so difficult to verify as acute septicæmia in a puerperal woman—I think it was little less than a travesty of justice and that a system which makes such an occurrence possible is not one which can be upheld.

Is it right that such an important and responsible duty should be thrust upon medical men? Are the majority of general practitioners qualified to do it and themselves justice? I do not hesitate to say that they are not, and in saying this I do not for a moment cast any aspersions on their skill and experience as medical practitioners. They are engaged in a laborious and engrossing occupation which, as a rule, hardly permits of their devoting time to a study of those special branches of their profession of use to them in general practice. Is it to be expected, then, that they will be able to prosecute a study of forensic medicine? The knowledge of the majority will therefore be confined to what they picked up as students, together with any little experience that they may have obtained afterwards. I am sure I do not overstate the case when I say that the above forms the sum total of medico-legal information possessed by most practitioners. No doubt a reference to "Taylor" may suffice to enable many to pass through the ordeal of the coroner's inquest and even of the assize court in ordinary cases without their real incapacity becoming apparent; but I ask, Is it right that such a grave and responsible duty should be demanded from gentlemen who have not the requisite experience to enable them to undertake it efficiently and who themselves, as a rule, regard the duty with distaste and would willingly escape from its performance if they could?

While it may be admitted that the majority of medical

men engaged in general practice are not fitted to conduct medico-legal post-mortem examinations the question very rightly arises, Is the teaching of forensic medicine what it ought to be? and is it conducted in the manner best adapted to enable the student afterwards, when in practice, to perform the duties required of him? I have had experience for 13 years in both teaching and examining students in forensic medicine and I do not fear contradiction when I affirm that no subject in the medical curriculum is more inefficiently taught, bearing in mind the practical necessities and requirements of the student. This result is due, in the first place, to the lecturers themselves who in many instances have not undergone special training or acquired any practical experience of the subject, but rather the reverse, since they are often men who have devoted themselves to other special branches of medicine and merely take the lectureship of forensic medicine temporarily as a means of getting placed on the teaching staff of the school. Is there any other subject in the curriculum in which such a thing would be tolerated or in which the standard of special qualification for a lectureship is lower? What interest can the student have in listening to lectures laboriously extracted from books he possibly has read himself the night before? and what advantage does he derive from discourses on an eminently practical subject from a teacher who possesses no practical experience? But of even more importance than the deficiencies of the teacher in many cases is the method of teaching he adopts or is obliged to adopt—viz., a course of prelections without practical demonstration and instruction. By practical instruction I do not refer to chemical experiments and tests, which in my opinion are of minor value to the student, but to practical demonstration on the dead body—and also on living persons—of the conditions upon which afterwards the student as a practitioner will have to give expert evidence. In no other branch of medicine is such a mode of teaching attempted. What value would lectures on chemistry, anatomy, and physiology have without practical demonstration and experiment? How would we describe a method of teaching pathology in which the student saw no morbid specimens and never attended the post-mortem theatre? What would be thought of the student who attempted to go for the examination in surgery or medicine without having received practical instruction in the wards of a hospital? Why, then, should it be thought possible to impart a satisfactory knowledge of forensic medicine—a subject which I hold to be eminently practical so far as the requirements of the medical practitioner are concerned—without affording the student an opportunity of seeing those operations and conditions with which he ought to be familiar and about which he will have to give evidence in courts of law, in cases possibly entailing the gravest consequences to others? I could illustrate by examples how erroneous in regard to many subjects an opinion may be in connexion with medico-legal cases, when the examiner's knowledge is based merely on written description and not on actual observation, and this holds good especially in regard to post-mortem appearances.

How many students when they obtain their qualification have personally performed a post-mortem examination? Very few; and still fewer have even seen one performed with attention paid by the pathologist to the recognised and essential rules of procedure and the precautions required in medico-legal investigations. It may be suggested that the student who has seen an ordinary pathological examination of a dead body is *ipso facto* capable, along with his knowledge of forensic medicine, of performing one in a medico-legal case. The two operations, however, differ very materially, not only in regard to their objects, but also in the procedure to be followed. The pathologist is already aware in most cases of the cause of death; or, if not, this question is of only secondary importance, so far as he is concerned, as compared with the confirmation of the presence or absence of the suspected disease and tracing the pathological processes in the various organs. External appearances do not interest him; the presence of injuries may be noted, but whether these were inflicted before or after death, how they were produced, in what time they must have proved fatal, and whether they were the result of suicide, accident, or murder, are questions which do not concern him or receive his attention. In the internal examination it matters little to him in what order the various cavities are opened, whether the heart is distended with blood, or empty, what is the condition of the blood, and what significance is to be attached to petechial ecchymoses on the lungs or the presence of froth in the trachea, and so on. In fact, the very points which may be of vital importance in a medico-legal case rarely engage his attention and the student who has assiduously attended the pathological post-mortem theatre may still remain ignorant of the most elementary rules for the performance of a similar operation in a medico-legal case.

It may be asked, How is the teacher to provide practical instruction in such matters for his students? I quite appreciate the difficulty and probably the best solution both for remedying the defects in the teachers to which I have already alluded and at the same time for providing means of more efficient instruction would be that the teachers should be men holding such an office, for instance, as that of surgeon of police. They would thus find many opportunities of demonstrating the facts which they taught and of illustrating their lectures in a practical manner. Failing the teacher being a surgeon of police he should at least be a gentleman trusted by the coroner of the district and employed by him regularly to make post-mortem examinations. (In this connexion I may remark that the professors of forensic medicine in the four Scottish universities—Edinburgh, Glasgow, Aberdeen, and St. Andrews—are all gentlemen in constant medico-legal practice, a fact which confers a mutual advantage on lecturer and student.) Apart, however, from a teacher having such facilities as are indicated above, I think a great deal could be done to improve the teaching of the subject with the material at present available in all general hospitals. In such institutions there are always cases from which valuable lessons can be learnt and impressed on the student: cases of poisoning, various forms of injury, children with vaginal discharges, and so on, while in the post-mortem theatre every cadaver presents some appearance or condition which will serve as a text for a useful demonstration. Such teaching, carried out with the permission of the pathologist, could not fail to interest and to impress the student and would at least make him conversant with many important facts in forensic medicine which would afterwards be of the greatest use to him.

Even, however, if the medical practitioner could be rendered, by improved teaching, more competent to fulfil the duties which the law demands from him I still do not think that he would be qualified to undertake many of the cases which now fall to his lot, or that he could fulfil the duty so satisfactorily as an official specially appointed to carry out such work whose continually increasing experience would be of the greatest advantage to the whole community. Our President referred to the question of appointing medical investigators or assessors to be attached to each coroner's court—a recommendation which was made by the Committee of the House of Commons on Death Certification in 1893. I am strongly of opinion that such appointments would be in the interests of the efficient administration of justice and would be welcomed by the profession at large. In France and Germany such officials already exist and in the opinion of competent judges their appointment has led to a diminution of crimes from a greater certainty of their detection and also to the distribution of equal justice. In Scotland the method of investigation in criminal cases, though by no means perfect, is, I think, open to fewer objections than the English procedure. In the regulations of the Crown Office for the guidance of procurators-fiscal it is laid down that in all cases where the discovery of a dead body shall come to the knowledge of the procurator-fiscal it is his duty to obtain from a qualified medical practitioner a written report relative to the cause of death, and, again, "where there is any reason to suppose that death has been caused by violence the body must be immediately examined by persons of medical skill." The procurator-fiscal, moreover, is responsible for the investigation of the case on behalf of the Crown and hence he naturally chooses a medical man whom he trusts and knows has had previous experience in similar cases to make the post-mortem examination, while in all cases in which there is any likelihood of a prisoner being put on trial the rule is to employ *two* medical men to perform the examination, one at least of whom is always a person of recognised skill and experience in such cases. The advantages of the Scotch procedure in regard to post-mortem examinations and other criminal investigations are (1) that the medical inspector must be a person of skill or, at any

rate, the best available medical man for the purpose; (2) that two medical inspectors are usually conjoined for the purpose of making the post-mortem examination; and (3) that these are required to give in a written report of the facts ascertained at the examination with their opinion as to the cause of death. The written medical report does not, I believe, exist in England, but I most strongly uphold the desirability, both in the interests of the Crown and those of the prisoner, of such a document being prepared and received in evidence. I do not see that any valid objection can be offered to this method which is employed in regard to most other matters on which expert evidence is required, nor can it be denied that such a means of at once recording the facts of a post-mortem examination is more satisfactory, clear, and trustworthy than that of taking down in writing evidence given at the inquest with the aid of frequent references to a notebook.

THE PROCEDURE AND METHODS WHICH SHOULD BE FOLLOWED IN MEDICO-LEGAL POST-MORTEM EXAMINATIONS.

Finally, I should like to refer shortly to some questions in connexion with the procedure advisable in medico-legal post-mortem examinations. This, it is true, is a subject which is dealt with in most text-books on forensic medicine, but still there are divergencies of opinion on some points, while the information is not always so explicit and clear upon certain questions which sometimes arise and upon which it is desirable that we should if possible be in agreement. Since the time at my disposal is limited I shall, in the first place, merely submit for your consideration certain general elementary propositions. Many of these will no doubt be readily acquiesced in and may hardly seem to require accentuation, but certain recent *causes célèbres* must have brought prominently under your notice the fact that even the most elementary and generally accepted rules of procedure are broken or ignored, even by gentlemen who have some claim to be regarded as experts in medico-legal work.

1. The medical inspector should, as a rule, have an opportunity of viewing the body before it is removed from the place or position in which it is found and in every case the body should be inspected before the clothes are removed.

2. The medical man who attended the deceased before death or was the first to see him after should not, as a matter of course, be appointed to make the post-mortem examination, or, unless he is known to be fully qualified for the duty. The reason for this must be obvious, since in many cases the treatment of the patient may be called in question by the defence, and it is against all principles of justice that a person whose conduct may be impugned, whether rightly or wrongly, should adjudicate on his own case. In this connexion I noticed recently in a medical journal that exception was taken to the fact that the medical practitioner who had attended a child suffering from enteritis and supposed ptomaine poisoning was not called upon by the coroner to perform the necropsy. The ground of objection to the action of the coroner in summoning an experienced pathologist to make the post-mortem examination in this case apparently was that the medical practitioner who prescribed for and treated a case of illness was *ipso facto* the most competent person to make the necropsy and to determine the cause of death. With equal force it might be argued that the physician who attends a patient during the onset of an appendicitis is the best person to operate when surgical interference becomes necessary. There may be many practitioners who are fully competent to treat a case of ptomaine poisoning, but surely there are not many who are bold enough to affirm that their pathological experience is sufficient to enable them to distinguish between this and other causes of enteritis or to justify their giving a decided opinion upon the question in a criminal court of justice. There seems to be a tendency to regard inquest fees as a reliable source of income and perquisite of a practice, transferable with its sale and impersonal to the owner of the practice; hence the outcry when a coroner, in the exercise of his discretion and plain duty, calls in outside aid. The position in many places appears to be—fees first and justice second; but such an attitude is wholly indefensible and the sooner it is recognised that there is no prescriptive right held by medical men to perform duties for which they have not rendered themselves specially fitted the better it will be for the community at large and the administration of justice.

3. A post-mortem examination should not be made on a case evidently judicial without informing the authorities beforehand, and the warrant or authorisation to perform a dissection should always be taken by the inspector to the examination.

4. No one should be allowed to be present at the examination out of mere curiosity or unless specially authorised.

5. Before proceeding to a dissection it is advisable that the examiner should be in possession of information as to the general, and also any special, circumstances of the case, and more particularly in regard to any injury or violence which the deceased may be stated to have received and as to any known diseased or other condition which may have contributed to the death. If this precaution is not taken it is quite possible that certain questions may be raised at the trial which the medical examiner is unable to answer owing to his attention not having been directed to the matter. Such questions may have little or no real significance as regards the main issues connected with the case, yet in the hands of counsel for the defence their importance may be so magnified as to lead the jury to believe that an imperfect and unsatisfactory examination of the body has been made.

6. The examination should not be commenced without sufficient daylight in prospect to allow of the whole inspection being made without artificial light.

7. The body should be identified by witnesses before the dissection is commenced.

8. Complete notes should be made during the dissection. All measurements should be accurately determined.

9. Injured parts (if possible), all diseased organs or portions of them, and all foreign bodies, should be removed and preserved for further examination.

10 The examination in all cases should be complete and all the necessary instruments, bottles, &c., should be provided before commencing the dissection.

With reference to the *external* examination of the body it is very advisable that this should include an examination before the clothes are removed, so that any signs of a struggle, marks of blood, &c., may be seen by the examiner and comparisons made with the injuries on the body. If clothes are removed before the body is seen by the examiner many accidents can occur, the results of which may seriously complicate the subsequent examination. Thus, not only may the post-mortem rigidity be destroyed, but at the same time, in the bending of rigid parts, such as the arm or neck, rupture of muscles may occur—for example, the platysma, sterno-mastoid, and biceps—a fact which I have frequently observed. The careless handling of a body will also very easily cause the contents of the stomach, when this organ is distended, to be forced up the œsophagus into the mouth or into the pharynx or larynx, where the presence of such matters may afterwards give rise to the suspicion of accidental choking as the cause of death. This is especially apt to happen in the case of young children. Apart, however, from such considerations, it is undesirable that a body should be manipulated more than is absolutely necessary by other hands than those of the medical examiner, since any roughness is liable to produce injuries, such as bruises and abrasions of the cuticle, which may not be easily distinguished by inexperienced examiners from the results of violence inflicted during life.

In regard to the *internal* examination I would like to enter a strong protest against the statement found in many books that this should commence with the cavity which is apparently implicated in the causation of death. Such procedure is liable to destroy most valuable evidence and seriously to interfere with the formation of a correct opinion as to the case. I submit that in all examinations the procedure should be: first, to open the abdomen and to inspect the contents of this cavity; then to open into the thorax and to observe the state of the heart in regard to its fulness and the fluidity of the blood; and afterwards to inspect the pleural cavities and external appearance of the lungs. The reason for this order of procedure is that we are able to observe the exact state of the abdominal viscera before there is any chance of their becoming soiled with blood, &c., from the thoracic cavity and before their position is altered through dividing the anterior attachments of the diaphragm. We are thus also enabled to note the state of fulness of the cavities of the heart before this is changed, as it must necessarily be, if any other cavity is first of all dissected. The state of the heart in the above respect is, notwithstanding arguments to the contrary, a most valuable diagnostic sign of death from

asphyxia. If the above procedure is followed so far I do not think it then matters which cavities are first of all subjected to more detailed examination unless the case be one of poisoning, in which circumstance the abdomen would naturally come first, or unless, again, it is evident that one of the cavities is specially concerned in the causation of death. In ordinary cases my practice is to proceed with the dissection of the mouth and upper air passages, then to follow these parts downwards and to remove them *en masse* along with the contents of the thoracic cavity, thus to obtain a connected view of the whole respiratory tract and to be able to trace foreign matters, &c., down into the smaller bronchi without the risk of accidental contamination by blood which is apt to occur if the lungs are removed separately. The heart and aorta also can thus be more satisfactorily examined while the now empty thorax is visible in every part. I notice that some books on forensic medicine in describing the method of removing the skull cap still recommend the use of the chisel after sawing through the external table of bone. Such a proceeding is, of course, inexcusable and in any circumstance the use of a chisel is quite unnecessary. Lastly, in regard to the examination of the vertebral column and cord, this should always be the final object of examination, because so far as regards the cord, to remove it before the other cavities and organs had been examined might seriously affect conditions existing in the latter of great importance in arriving at a just appreciation of the cause of death, while in regard to the vertebral column, its exact condition *quâ* fracture or injury can only be made out after it has been fully exposed to view and its manipulation thereby facilitated. The examination of the spinal cord constitutes the sole exception to the general rule that all the chief cavities and organs of the body must be examined in every medico-legal post mortem examination. This exception will be readily conceded in the majority of cases which come under investigation, but there are some circumstances in which neglect to examine the cord would undoubtedly be a grave error, as, for example, in suspected poisoning by strychnia or some of the other alkaloids, in cases of death from tetanus, or cases in which there have been prior to death symptoms of spinal irritation or inflammation.

I fear that I have very inadequately brought before you some of the considerations which the title of this paper suggests, but if it leads to a useful discussion its primary object will have been fulfilled; at any rate, perhaps we may feel that ground has been broken in regard to a question which is of great importance and which will frequently engage our attention in the future.

Edinburgh.

BILHARZIOSIS SURGICALLY CONSIDERED.

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THE morbid changes occurring in the body and known by the name of bilharziosis are due to the deposition in the tissues of the eggs of the bilharzia parasite. Surgically we have only to do with these changes when they occur in places where they can be reached by the ordinary means at the disposal of the surgeon—viz., in the bladder, the urethra, the rectum, and the female genital organs.

Bilharziosis develops in two distinct ways which may, however, be combined in the same case. Thus it may cause the destruction of the mucous membrane of the part which it attacks by the formation of new fibrous tissue replacing the glandular elements of the part, this being the atrophic form; or it may cause great overgrowth of the normal elements of the part attacked with the formation of polypi and similar outgrowths, this constituting the hypertrophic form of the disease; or these two forms may be combined to bring about a variety partaking of the characteristics of the two with the formation of an enormous mass of tissue *sui generis* which may be called bilharzial tissue.

The symptoms of bilharziosis of the bladder are hæmaturia characterised by the loss of blood occurring at the end of micturition, pain and scalding at the time of the passage of the urine, and some frequency in micturition. These all occur in the early stage of the disease and the majority of cases never get beyond this. If, however, the disease progresses owing to repeated infection of the host by new parasites it takes on more serious characters and an intractable cystitis is developed which gradually passes into septic cystitis of the worst form, with loss of function of the bladder and constant tenesmus, entailing most severe suffering on the patient. The patient is also liable at any time during the progress of the disease to acute retention of urine from blocking of the urethra by a calculus, a piece of detached bilharzial tissue, or a clot, or to excessive hæmorrhage with retention of the extravasated blood. He is also commonly the subject of stone in the bladder and he may develop carcinoma in addition to his bilharziosis. In cases where the formation of bilharzial tissue is extreme adhesions may form between the distended bladder and the anterior abdominal wall with the subsequent formation of urinary fistulæ in this part, through which the greater part or even the whole of the urine may escape. Bilharzial infiltration of the prostate and seminal vesicles does occur, but it does not seem to give rise to any very definite symptoms and need not be considered separately. Bilharziosis of the ureter is important in that it may cause obstruction to the passage of the urine and constant hydro- and pyo-nephrosis, either by narrowing of the canal in the atrophic form or by blocking of it by polypi in the hypertrophic form. Death occurs in bilharziosis of the bladder either from exhaustion from constant pain and hæmorrhage or from disorganisation of the kidneys or from septicæmia.

The diagnosis of bilharziosis of the bladder rests chiefly on the peculiar hæmorrhage and on the detection of the eggs in the urine. The treatment of bilharziosis in all its forms must be purely symptomatic, the primary cause of the disease, the parasite, being protected from attack. The stage of hæmaturia is best treated by the administration of liquid extract of male fern which has a marked effect in controlling the loss of blood. Cystitis may be treated by washing out the bladder with mild antiseptics, such as boroglyceride or quinine, astringent solutions having very little effect. In the later stage medication by the mouth by means of salol, urotropin, or methylene blue may be added to the treatment locally. Calculi, if formed, should be removed by lithotrity, as cutting operations run a comparatively unfavourable course. In the very late stages of the disease, when there is a great accumulation of bilharzial tissue in the bladder and the patient is being exhausted by constant tenesmus and want of rest, it will be necessary to drain the bladder. The simplest way of doing this is by means of a Cock's puncture through the perineum, as it is a simple operation and avoids all unnecessary manipulation. In certain favourable cases an attempt may be made to remove at the same time the accumulated bilharzial tissue, but this must be done with the greatest care on account of the diseased state of the bladder walls which may easily be perforated. If a cleansing operation can be done it greatly shortens the subsequent duration of the case, for even in the most favourable conditions the diseased mass will have to be thrown off by sloughing before the patient recovers. Unfortunately, the prognosis in these cases is very bad, for the kidneys are, as a rule, extensively diseased and the patients are very liable to die during the process of sloughing. Acute retention complicated by hæmorrhage must also be treated by perineal drainage in order to clear the bladder and to prevent a recurrence of the bleeding.

There appears to be no satisfactory way of treating suprapubic fistulæ, for by the very nature of the disease the bladder is incapable of resuming its functions and the urine will continue to escape by the fistulæ. Bilharziosis of the prostate would seem to be benefited by simple incision and hydro- and pyo-nephrosis must be treated on general principles.

Bilharziosis of the urethra, for practical purposes, only exists as urethral urinary fistula and may be described as such. These fistulæ are of two kinds, one, the more common, arising from the pubic side, or "roof" of the urethra, and the other, the more rare, arising from the perineal side, or "floor" of the urethra. The two forms are distinct in all respects and merit a description apart. It has been suggested that both these forms arise primarily in the peri-urethral tissues and extend to the urethra secondarily, but I do not think this is so, for if it were cases would be met with in which the disease was still localised in the surrounding

tissues and the urethra was still intact, but this I have never seen and I should doubt if it ever occurs. On the other hand, cases are met with, rarely, it is true, in which the urethra alone is attacked and, more commonly, cases are seen in which the disease is in an early stage and in all of these the urethra is affected. At the same time it is a singular fact that the urethra is the only part commonly attacked by bilharzia, where the disease instead of spreading along the surface attacks the deeper parts. The course taken by the disease in "roof" fistulæ is peculiar, for at first it is directed upwards towards the limiting membrane of the corpus spongiosum on the side of the corpora cavernosa, but on reaching this it turns round the urethra and makes its way down to the skin in the perineum which it finally destroys and opens on to the surface. The amount of inflammation involved in the formation of a "roof" fistula is but small and the symptoms to which it gives rise to in its formation are by no means severe.

"Floor" fistulæ from their earliest stages take on the form of peri-urethral abscesses, probably because, being in a dependent position, they tend to retain the urine and their own débris which decompose and excite a septic inflammation; at the same time during their formation they cause the formation of a great deal of new fibrous tissue round themselves and they also discharge a large amount of intensely irritating pus which causes secondary inflammatory changes in the distal urethra. The origin of all "roof" fistulæ is practically limited to the part of the urethra immediately in front of the bulb, whereas the "floor" fistulæ are by no means so limited. The "floor" fistulæ develop much more slowly than the "roof" fistulæ and owing to their septic nature their symptoms are much more severe. In "roof" fistulæ the history given by the patient begins with the formation of a small subcutaneous abscess to which he does not attach much importance and which he says burst and left a wound from which after a time he noticed that urine passed on micturition; in "floor" fistulæ, on the other hand, the patient complains of great pain and scalding on micturition, with difficulty and increased frequency, and if, as is often the case, he seeks advice early in the disease of a painful spot in the course of the urethra.

The signs of the two forms are also quite distinct. In "roof" fistulæ there will be one or more openings in the perineum, situated somewhat away from the immediate course of the urethra, the skin around which will be scarred and drawn into the central point but not greatly infiltrated, and there will be some thickening in the underlying tissues. In "floor" fistulæ the signs are more marked, the openings will be in the immediate line of the urethra, either in the perineum or in the penis, there will be extensive implication of the skin and the underlying structures will be infiltrated by a mass of stony hardness extending down to the urethra, there will probably be a plentiful discharge of pus from the urethra and the meatus will be scarred and markedly narrowed, and on passing a sound there will probably be found a bad stricture extending from the meatus to the point of origin of the fistula.

The treatment of both forms of fistulæ is by free excision but the method of operating differs in the two forms. In "roof" fistulæ an elliptical incision is to be made in the perineum including all the fistulæ present and the surrounding skin, and this is to be carried down to the level of the urethra, which is to be defined by the passage of a full-sized catheter; when this is reached the mass of tissue included in the incision is to be removed, by which means the fistulæ will be cut through at the point where they curve round the urethra to reach the "roof"; the remaining part of the track must then be thoroughly scraped with a sharp spoon until every particle of granulation tissue has been removed and the opening in the urethra defined; the wound should be plugged wide open with some antiseptic gauze and left to close by granulation. It is rare to find strictures in "roof" fistulæ, but they do occur in old cases with great destruction of tissue; they are then most intractable, for either they consist of dense fibrous tissue replacing the part lost or else they consist of granulation tissue the organisation of which is so low that although a catheter may be driven through it no canal will remain on the withdrawal of the instrument. When these strictures are met with the only thing to do is to excise them and to try to maintain a channel for the passage of the urine during healing.

In "floor" fistulæ the method of operating has to be different, because in them stricture is the rule and prevents the passage of a sound and because the tissues are so infiltrated that even with a sound in position it is impossible to locate the position of the urethra at the time of operating. In these cases it is necessary to locate the urethra by cutting directly down on it and laying it freely open; when once this has been done the infiltrated tissue can be dissected away from the urethra without any fear of accidentally injuring it. The incision into the urethra not only protects it from injury, but it also acts as an external urethrotomy and assists in the cure of the stricture. The rest of the stricture should, of course, be dilated at the time of operation and the dilatation subsequently be kept up by the frequent passage of sounds.

The most intractable of all fistulæ are certain "roof" fistulæ which go astray, as it were, and instead of coming to the surface in the perineum, make their way along the division between the spongy and cavernous bodies and find an exit at the pubes or in the anterior part of the scrotum. No partial operations are of any good in these cases—the only thing to do is to lay the whole track widely open by slitting the scrotum in two halves and then leaving the wound to granulate.

In a few cases bilharziosis is limited to the termination of the urethra and the glans penis and causes the formation of an intractable ulcer at the meatus or multiple minute fistulæ in the glans. In these cases also free excision must be done and the diseased part removed, care being taken in the after treatment to prevent stricture at the meatus. The diagnosis of most forms of urethral bilharziosis is easy; with straightforward cases there can be no difficulty, as practically all urinary fistulæ in this country are due to bilharziosis. In some early cases of "floor" fistulæ in the stage of peri-ureteral abscess there may be difficulty in diagnosing the disease from impacted stone in the urethra with incomplete occlusion of the canal, but the history, the typical pus escaping from the meatus, and the passage of a sound, will clear up the case. Bilharziosis of the meatus and glans is, I am afraid, often taken for gonorrhœa, but the pus is quite different in character and the presence of the typical ulcer or of the equally typical fistulæ should make the diagnosis easy when once the existence of the disease is recognised.

In the rectum particularly good examples of the atrophic and hypertrophic forms of the disease are found. The atrophic form is developed best in the neighbourhood of the anus where the mucous membrane will be found to be replaced over large areas by the peculiar form of scar tissue, forming patches of a pyramidal shape and raised above the level of the surrounding bowel, of a grey colour paling to white in the thicker parts and with their surfaces pencilled with fine creases and fissures and with isolated patches of the same nature in the neighbourhood. In the hypertrophic cases there is great thickening of the whole of the mucous membrane with the formation of enormous numbers of branching polypi extending up the bowel beyond the reach of the finger. The earliest symptoms of rectal bilharziosis are a constant desire to go to stool owing to the irritation of the part and the excessive secretion of mucus and tenesmus from constant efforts at expelling the offending matter. As the disease advances the necessity of evacuating the bowel becomes more frequent and urgent and the straining causes the hyperæmic mucous membrane to bleed, inducing the so-called bilharzia dysentery. This is followed after a time by the stage of prolapse, when the lower bowel, as a result of constant straining, is protruded from the body, the protrusion being assisted by the heavy engorged state of the gut. In the atrophic form the disease does not, as a rule, go on to prolapse, but the straining and tenesmus are very marked. True stricture of the rectum is rare but there is a sort of false stricture due to loss of resilience and dilatability of the part which causes the patients much suffering. Bilharziosis of the rectum kills in much the same way as bilharziosis of the bladder—by exhaustion from want of rest, constant pain, and the continual loss of blood.

The treatment of bilharziosis of the rectum in the early stages consists in allaying the irritability of the bowel by local sedative and astringent applications, such as enemata of starch and opium or of solutions of sulphate of copper or of nitrate of silver. When polypi are formed an attempt may be made to remove them, but this is very unsatisfactory, as they extend so high up the bowel that it is impossible to get beyond them and to do anything like a radical cure; still a certain amount of relief may be given which is also

increased by the stretching of the sphincters which is necessarily done at the same time. It will also be found that where the polypi are too numerous for removal swabbing out the rectum as high as can be reached with a solution of 1 in 40 chloride of zinc will cause an abatement of the more urgent symptoms. The question of excision of the rectum naturally arises in this connexion and in some few cases it may be done with advantage, but this only in cases where the prolapse has occurred in men in fair general health, who have not been broken by suffering and where the prolapse is, as it were, traumatic in its nature. In performing excision of the rectum for this disease there is no necessity for removing the sphincters and they should be carefully preserved in order to obtain a good result. Bilharziosis of the rectum has only to be diagnosed from dysentery and the onset of the disease, together with the nature of the stools and the absence of general gastro-intestinal disturbance, is quite sufficient to distinguish between them.

In females the place of the rectum and urethra, in liability to attack by bilharzia, seems to be taken by the genital organs and especially by the vulva and vagina. In the vulva any of the structures may be attacked, but the most common seat is in the labia minora. Here the disease generally takes on the hypertrophic form, with occasionally the formation of warty masses which resemble bunches of currants and which may attain considerable size. In the vagina both forms are found, the hypertrophic form occurring at the outlet and vault and the atrophic form in the canal of the vagina itself. The symptoms of bilharziosis of the vulva and vagina are not well marked; they consist for the most part of discomfort and inconvenience from the presence of the tumours and from the accompanying discharge. Bilharziosis of the uterus takes the form of polypi growing from the vaginal aspect of the cervix and I have never seen a case where it did not occur in association with bilharziosis of the vagina.

The treatment of bilharziosis of the female genitalia is by excision, which, except in cases of generally diffused bilharziosis of the vagina, is easy in execution and appears to give good results. At first some difficulty may arise in diagnosing between advanced bilharziosis of the vaginal vault and carcinoma of the cervix uteri, for the fleshy polypi closely surrounding the cervix, and shutting it in, resemble very closely the typical cauliflower growth of cervical carcinoma, but the absence of ulceration and foul discharge and of invasion of surrounding parts serves to put the surgeon on his guard, and a more careful examination will reveal the healthy cervix hidden behind the mass of new growth. In general bilharziosis combinations of any or of all of the above forms may occur, together, it may be, with other forms which are as yet beyond the reach of the surgeon, such as bilharziosis of the liver, spleen, kidneys, and probably other organs.

STATISTICS.

The few statistics which I have been able to collect are worked out from the patients treated at the Kasr el-Aini Hospital during the year 1901. These in all numbered 930, but of this number 714 attended in the out-patient department only and about these very little information can be recorded. The chief deductions which I have been able to make are as follows:—

1. *Age.*—All ages are liable to be attacked, the records showing three cases of children aged four years with bilharziosis of the bladder and 19 patients aged over 60 years. By far the largest number, however—viz., 687, or 75 per cent. of the total—were between the ages of 15 and 45 years. The total numbers were: up to five years 10, or 1 per cent.; from five to 15 years 87, or 9·3 per cent.; from 15 to 30 years 432, or 46·5 per cent.; from 30 to 45 years 255, or 27·4 per cent.; from 45 to 60 years 122, or 13·1 per cent.; and over 60 years 26, or 2·5 per cent.

2. *Sex.*—The vast majority of cases occurred among males, the totals being males 893 and females 37, or more than 24 males for every female. Part of this apparent excess is due, no doubt, to the females not coming so freely to the hospital for treatment as do the males, but it cannot be entirely due to this, for a very fair number of women come to the gynæcological out-patient department for treatment. Among children under 15 years of age the proportion of males to females is certainly a good deal less, the numbers being males 90 and females eight, or a ratio of about 11 to 1. Up to this age the sex variant is practically non-existent, but at the same time any difference in the mode of life or in occupation which may occur among adults has not yet developed.

3. *Race.*—As regards race a very marked difference is found. Of the 925 patients under consideration, leaving out five cases of foreign or mixed nationality (a half-breed, a Jew, a Greek, an Armenian, and a Tunisian), no less than 908, or nearly 98 per cent., were Egyptians, the remainder being made up of six Berberines, six Copts, and only five Soudanese. The small number of Copts and Berberines may be accounted for by these being essentially indoor or town races, but the markedly small number of Soudanese patients can hardly be thus accounted for; it must be remembered that a large number of these blacks have passed the greater part of their lives in Egypt and under the same conditions as the native Egyptians. At present I am altogether unable to account for this apparent immunity of the dark races, but I think that it is probable that as our knowledge of the disease increases some reason for it will be found either in their habits or in their diet.

4. *Occupation.*—The statistics of occupation point very strongly to one particular class as being peculiarly liable to infection, this class being the *fellahin*, or peasant class, for out of 199 male patients whose occupation was known no less than 140, or 70 per cent., were returned as belonging to this class. In only one other class did the numbers touch double figures, and this was the class of *fiki*, or slightly educated persons of the peasant class who are attached to mosques and who also give instruction in the country elementary schools, and of these there were but 13.

5. *Geographical distribution.*—The great majority of the cases, as has been seen, come from the country, the numbers coming from the towns being very small indeed. Thus although the hospital from which these observations are taken is situated in Cairo and would naturally draw the majority of its patients from its immediate neighbourhood, yet out of 208 cases localised only 37, or about 17 per cent., are noted as coming from Cairo, and this including Old Cairo, Shubra, &c., which are practically country districts. Of the cases coming from the provinces the great majority came from the Delta. Of the 170 cases no less than 145 came from Lower Egypt and these were distributed as follows: Gharbieh, 20; Sharkieh, 39; Dakhlieh, 20; Galioubieh, 19; and Menoufieh, 38. Only 25 cases were left for the whole of the rest of Egypt and these were distributed as follows: Ghizeh (which physically is more akin to Lower than to Upper Egypt), 14; Beni Souef, two; El Fayoum, five; and Minieh, four; the provinces of Assiout, Ghirgeh, Keneh, and Assouan not sending a single case.

6. *Forms of the disease.*—The most common form of the disease as seen at the hospital is bilharziosis of the bladder, of which there were 599 cases, or 64 per cent. of the whole number treated; the next most frequent form was what is almost the same form of the disease—viz., vesical calculus, of which there were 134 cases; after this urinary fistulæ, 113 cases; and then bilharziosis of the rectum and general bilharziosis, 53 cases; besides these there were 29 cases in which necropsies were made for other diseases and in which bilharzia worms were found in the portal vein.

These statistics relate to the year 1901 and they show only one case of bilharziosis of the vagina, but it is probable that other cases occurred which were not recognised. An unclassified case was one of old-standing sinuses over the sacrum in which the sinuses were found to be lined with unhealthy granulation tissue containing innumerable bilharzia eggs.

I have throughout these observations included vesical calculi as one of the manifestations of bilharziosis, but I am not quite sure that I have been right in doing so in all cases. In a large number of cases of stone there is demonstrably also bilharzial cystitis, and this not only in cases of phosphatic calculi, with decomposition of the urine, but also in cases of uric acid and oxalate calculi. Still, the connexion which I do not doubt exists between the two diseases has yet to be worked out properly. The general statistics of bilharziosis as shown in this paper would not be greatly altered if the calculi were left out, as in the matter of age, sex, race, occupation, and geographical distribution the separate figures run altogether parallel, which also might be urged as an indication of the relation of the two diseases to one another.

I had hoped to make some experiments with the urine of a number of healthy persons in order to estimate the frequency of the disease among the natives, which there is reason to believe is very great, but unfortunately I have not

been able to carry this out. Mr. W. Bryce Orme, principal medical officer of Port Said Hospital, most kindly examined the urine of 40 healthy pupils in the Government school in that town and found bilharzia eggs in five cases. Port Said, however, is not a good bilharzia centre owing to its situation and water-supply and I believe that the schoolboys of Cairo would show a much larger proportion than this. Dr. Calamawy of Assiout Hospital also examined 32 pupils of the school there, but he failed to find eggs in any of them, but then again Assiout is also not a good bilharzia centre, none of the 200 odd cases in Kasr-el-Aini Hospital having come from that province.

In order to make good this deficiency Mr. Guirgis, house physician to Kasr-el-Aini Hospital, examined the urine of 100 consecutive patients admitted to the medical side of the hospital in June of last year. Of these 100 cases no less than 35 were found to have bilharzia eggs in their urine, although only two complained of any symptom of the disease. In no less than 15 of these 35 cases was the disease associated with pellagra and this out of a total of 25 pellagra cases only; in two cases the eggs were associated with ankylostoma, and in six cases the patients were peasants who were admitted for inoculation after being bitten by dogs. The nationality of the cases admitted was as follows:—

Egyptians	89	with	35	cases	of bilharziosis
Soudanese	7	,,	0	,,	,,
Berberines	2	,,	0	,,	,,
Others	2	,,	0	,,	,,

This illustrates the frequency of the disease among Egyptian peasants and the comparative immunity of the black races.

If it is permissible to draw conclusions from such a small number of cases as are here reviewed these would be as follows. Bilharziosis is a disease of very frequent occurrence in Egypt; it is most commonly found among the peasants and more especially among the peasants of Lower Egypt; it is liable to attack all ages with the probable exception of nursing children; males are more frequently attacked than females; the black races appear to enjoy a certain amount of immunity; and many more people suffer from the disease than are aware of the fact.

Cairo.

FURTHER NOTE ON THE PULSE WAVE IN AORTIC REGURGITATION.

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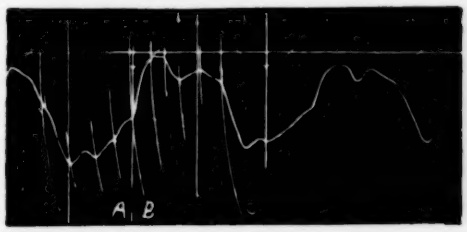
IN a previous note on the heart-index interval[1] I discussed the extreme views held by various writers as to the shortening or lengthening of the interval in aortic regurgitation. I then furnished definite experimental proof that both those writers who stated that the heart-radial interval was always shorter than normal—e.g., Keyt—and those who stated that the interval was always longer—e.g., Sir William H. Broadbent—were equally inaccurate. Sir William Broadbent[2] having said that "the pulse in aortic regurgitation is always retarded or delayed," I expressed myself as being in disagreement with him and in agreement with Dr. Walshe[3] who confined himself to the more accurate statement that "the retardation (of the pulse) may with care be detected in many, but unquestionably not in all, cases of that disease." When everyone cannot speak with equal authority as a clinician and when many clinicians of equal authority differ on a point of observation it is a relief to turn to actual physiological experiment for some undeniable facts. So I do not propose to discuss the matter again at any length.

1. The normal heart-radial delay is about 0·18". 2. The normal heart-index delay is about 0·20". In my former note (of a case of simple aortic regurgitation) the delay (2) was 0·216". A lengthening of $\frac{1}{100}$" quite indistinguishable by touch.

[1] Brit. Med. Jour., Feb. 16th, 1901.
[2] Heart Disease, 1897.
[3] Practical Treatise on Diseases of the Heart and Great Vessels, American edition, 1862, p. 72.

I now publish the following tracings from the case of a young man suffering from well-marked aortic regurgitation. The first tracing is a simple cardiogram of unimpeachable accuracy (see Fig. 1). The second is

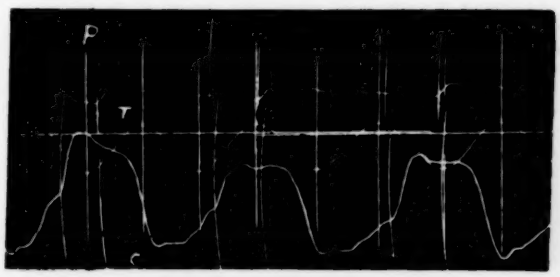
FIG. 1.



A, Beginning of auricular systole. B, Beginning of ventricular systole and cessation of auricular systole. C, Cessation of ventricular systole. Pulse-rate, 80. Duration of ventricular systole, from 0·330" to 0·325". Duration of auricular systole, 0·083". From B to bottom of dicrotic notch, 0·175".

a simultaneous pulse and heart tracing (see Fig. 2). The three letters in this figure, P, T, and C, simply indicate pulse, time, and heart. The straight vertical lines measure off abscissæ of time in quarter seconds. The curved ordinates are described by movements of two levers, attached to the pulse and apex beat respectively by suitable connexions. In a long series of measurements, of which this is only a specimen, the heart-index delay is 0·182" usually, only in some few instances reaching a maximum of 0·200". The heart muscle in this case is largely hypertrophied and the duration of ventricular systole is at its extreme maximum for a pulse-rate of 80. It is usually less in health, varying in different circumstances between 0·30" and 0·33". It is to be noticed that the duration of ventricular systole, strangely independent of extraneous circumstances, is some evidence of structural change in the heart muscle. If very short it is direct evidence of degenerated muscle and is a means of differentiating between (1) fatty infiltration or deposit and (2) fatty degeneration of the muscular fibre itself. In the hypertrophied compensatory heart of aortic regurgitation the duration of systole is rather longer than in a normal heart; the larger muscular mass responds more slowly to stimulus, moves more slowly, and against a much larger initial pressure. The heart-index delay in this case is seen to be never longer than normal, while it is usually less than normal. It varies inversely with

FIG. 2.



Simultaneous pulse (P), heart (C), and chronographic (T) tracings. Heart-index delay, 0·182" (occasionally it was 0·200").

the vigour of the heart's contractions and the tension in the arteries. When (in other cases than this) the delay is longer than in health it is owing to a "collapsed and empty state of the arteries between the beats and partly to their large size and loss of tone," as Sir William Broadbent[2] says. But to this must be added want of due compensation arising from a heart which has not yet responded, or will never respond, to the new calls made upon it or which, having long borne

[2] Loc. cit.

a heavy burden, is now commencing to fail or is slowly undergoing degeneration. The burden is great. In a normal heart the ventricular blood pressure at the beginning of systole is about 20 mm. Hg; in aortic regurgitation it may be 150 mm. Hg. I have shown that in the latter case the contraction of the heart is more of the nature of a steady push against a weight, and the resulting wave, not being created by impact, is a slowly propagated wave—that is, one of much less velocity. I believe this to be the real reason why the appearance of the radial pulse is not more often anticipated and that it is only thus we can account for the fact that the disappearance of the *pre-sphygmic interval* is not more frequently accompanied by shortening of the heart-radial interval.

As I have now furnished graphic proof in support of my contention that the pulse in aortic regurgitation is *not* "always retarded or delayed," I think it must stand as an established fact that my contention is justified. Indeed, the tracing (Fig. 2) here given is complete evidence of what I was not prepared to state on the authority of my sense of touch, but what from my studies on the physics of the circulation I felt sure must be possible—viz., that in some cases of aortic regurgitation the heart-radial interval may be even shorter than normal. There may be some who think that the matter is small and unimportant and after all not worth the trouble of proof. I would bid them not to be hasty but to consider the matter more deeply. In it lies quite a small world of interest, of beautiful and absorbing questions of physics; and, bound up with them, we have a means of estimating compensation or its absence, of avoiding certain commonly employed but baneful methods of treatment, and we have a means of wisely using our reason for the benefit of each individual case of aortic disease. These cases are too often treated according to some general method; as if all cases of aortic incompetency were, on broad grounds, to be treated alike. That this is not so, and also the reasons why it is not so, and what means we should employ to bring about a state resembling as far as possible a normal condition, follow directly from the evidence gained by such experiments. Here a new field lies open and in it in the future much useful work may be done.

Hereford.

ON THE

NECESSITY FOR A MORE FREQUENT USE OF THE CYSTOSCOPE IN THE DIAGNOSIS OF DISEASES OF THE URINARY SYSTEM.

BY JOHN G. PARDOE, M.B., C.M. ABERD., F.R.C.S. ENG.,

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ALTHOUGH a good many years have passed since the introduction of the electric cystoscope as an instrument of precision and as an unequalled means of diagnosis in diseases of the urinary tract, it is scarcely an exaggeration to say that the interest taken in it by the majority of surgeons is very faint and that it is looked upon either as a somewhat ingenious toy of little practical value, or so difficult to use and so uncertain in its results as to restrict its employment to the few. Such is the impression which I have gathered from conversation with members of all ranks in the profession, from the general practitioner as well as from the operating surgeon. This fact is also demonstrated by reference to the latest editions of the text-books upon general surgery in the English language which are at present most widely read by student and practitioner alike, for although in the majority of them some reference is made to the instrument and its use the importance of cystoscopy and the valuable results to be obtained by all who care to gain the mastery of this instrument most certainly are not urged upon the reader. This probably is due to the fact that it takes time to learn how to use the cystoscope correctly, just as it takes time to learn the use of the ophthalmoscope or laryngoscope, not so much from the circumstance that it is difficult to gain a satisfactory view of the interior of the bladder—for any surgeon can overcome that difficulty very readily—as from the necessity of gaining sufficient experience to appreciate at their proper value the appearances observed. Certain writers apparently consider that the dangers of the instrument outweigh the benefits to be obtained, but these dangers are, after all, but little if any more than those attending the passage of any metal instrument into the bladder. One writer, for instance, in discussing the diagnosis of bladder growths, says: "In certain obscure cases, as when a growth is present for some time without causing bleeding, this instrument will be of much service. But it must not be forgotten that its use entails certain disadvantages. Thus, very easy to use in the bladder of women, in men it is a very different matter. Here, in the deep urethra, it may exite bleeding or it may cause grave febrile disturbance; one case has been related to me in which difficulty of manipulating it through the prostatic urethra was followed by fatal injury to this part. Such cases are not published." This statement would apply equally to the use of any metal instrument of an equal calibre, roughly speaking, No. 11 of the English scale, yet this writer in an adjacent paragraph says: "Sounding.... should be made use of thoroughly and carefully; .... by using the sound with judicious and gentle vigour particles of a villous growth may be detached for microscopical examination. This perhaps may be aided by washing out with a lithotrity evacuator." To advise a judicious yet "gently vigorous" stirring up of a possible growth of the bladder, to be followed by the use of so powerful an instrument as a lithotrity evacuator, whilst damning with faint praise the cystoscope, which to be of any service must be used with gentleness, is at least curious, and convinces me that the writer can have had but little practical experience of the latter instrument. But it is necessary to justify to others the faith that is in one and I trust to do so by the following striking examples which illustrate the reversal by the cystoscope of diagnoses made without the aid of that instrument and the calamitous results which sometimes follow neglect to use it.

CASE 1.—The patient was a male, aged 42 years, who for some months had suffered from hæmaturia, increased frequency of micturition, and pain. The hæmaturia was intermittent but on at least two occasions it had been profuse. The abnormal frequency of micturition was also intermittent, whilst the pain was chiefly suprapubic in situation and of a dull, aching character. Pain of the same nature was also complained of over the upper part of the sacrum and occasionally in the glans penis after passing urine. The bladder had been sounded by several competent surgeons with negative results and a rectal examination revealed nothing abnormal. A growth in the bladder was suspected and suprapubic exploration was advised if the cystoscope should confirm the provisional diagnosis. Cystoscopy, however, revealed a bladder normal in all respects save that there was a swelling of the right ureteral orifice. Through the opening I saw the gleam of a calculus which was filling the ureteral ampulla and gradually dilating the orifice. The patient was directed to drink large quantities of bland fluids and to take fairly violent exercise, with the happy result that three days later he had the pleasure of sending for inspection a rough calculus rather smaller than a horse-bean. But for the cystoscope this patient would undoubtedly have been submitted to a suprapubic cystotomy. He gave no history of renal colic or pain along the course of the ureter. Pain evidently commenced only when the stone reached the narrow opening into the bladder. He had been sounded several times and as the exposed portion of the stone was only of about the size of a pin's head it was only natural that it was not felt. The negative sounding, combined with the somewhat profuse hæmaturia and the absence of renal symptoms, justified the provisional diagnosis, which fortunately was only provisional.

CASE 2.—The patient was a male, aged 62 years, who for six months had suffered from severe pain, gradually increasing in severity, in the left lumbar region, radiating thence to the left inguinal and suprabubic regions. The pain was intermittent in character and was worse during some attacks than in others. There was also fairly profuse hæmaturia which was generally most marked when the pain was most severe. The urine between the attacks was normal both in appearance and upon examination. The symptoms pointed, therefore, to left renal stone or to renal growth. On examination with the cystoscope a villous growth was discovered attached by a pedicle to the bladder wall in the vicinity of the left ureter, the orifice of which was completely hidden by the growth. On removal of the growth through a suprapubic incision all renal symptoms disappeared. In this case left kidney trouble was closely mimicked by a growth of the bladder, the lumbar

and ureteral pain being caused obviously by the drag of the growth upon the ureteral orifice. The patient was saved a useless nephrotomy, which was certainly indicated by the symptoms.

CASE 3.—The patient, a male, aged 61 years, had suffered for four years from an enlarged prostate complicated by cystitis and the formation of phosphatic calculi. On three occasions litholapaxy had been performed. For nine months he had been absolutely dependent upon the catheter, the cystitis had increased and was only kept in check by washing out the bladder twice daily, and the sound revealed the presence of another stone. The prostate, per rectum, was found to be moderately enlarged, both lateral lobes being about equally involved. The advisability of suprapubic prostatectomy was considered, but before proceeding to this radical measure cystoscopy was advised to ascertain the condition of the prostate on its vesical side. The cystoscope showed a stone, one inch in its longest diameter, lying under, and half hidden by, a pendulous median enlargement of the prostate. This adenomatous mass, of the size of a small walnut, was attached to the main body of the prostate by a distinct though short pedicle. A small median perineal incision sufficed to remove both stone and growth and to provide for adequate draining to cure the cystitis. The wound healed in a fortnight and during the 20 months which have elapsed since the operation this patient has had complete control over his urine, which remains clear, and has had no further stone formation. Here, by the aid of the cystoscope, a simple operation was substituted for one much more dangerous and the period of convalescence was reduced by one-half.

CASE 4.—The patient was a male, aged 34 years, who had suffered from four or five attacks of profuse hæmaturia during a period of nine months. The attacks lasted from one to four or five days and were unattended by other symptoms save some pain from the passage of clots and occasional dull aching in the left loin. Physical examination failed to reveal anything further, but the cystoscope showed me a large single ulcer to the inner side of, and below, the orifice of the left ureter. Tubercle bacilli were afterwards found in the urine. Under appropriate treatment the ulcer gradually healed, the process being watched from time to time by means of the cystoscope until healing was complete. This patient has returned to his work as a postman and has kept well during the past nine months. Could this diagnosis have been made with equal certainty by any other method? and without the cystoscope would not this patient have been subjected to a suprapubic exploration?

CASE 5.—The patient, a male, aged 61 years, suffering from severe intermittent hæmaturia with pain on micturition and increased frequency, I found on examination with the cystoscope to be suffering from carcinoma of the bladder chiefly implicating the posterior wall and trigone, but of so extensive a character as quite to contra-indicate any operative interference. Growth of the bladder was diagnosed, it is true, before cystoscopy, but the nature of the growth was doubtful and the cystoscope alone could settle the advisability or otherwise of operation.

CASE 6.—The patient was a male, aged 45 years, who suffered from three quickly repeated attacks of violent hæmaturia without any other symptoms to account for the trouble. He was in good general health and complained of no pain except that caused by the passage of clots along the urethra. He came from the country, a long journey by rail, for examination. Nothing could be felt either abdominally or per rectum to throw light upon the case. The railway journey started the bleeding afresh and on the following morning on attempting cystoscopy the bladder was found to be half full of soft clot and the bleeding was still proceeding. In such circumstances cystoscopy was impossible and as from the severity of the hæmorrhage and the bright red colour of the blood it seemed probable that its source was vesical the bladder was opened suprapubically but was found to contain only clot. No further bleeding occurred whilst the wound was healing but on rising for the first time some 14 days later another slight hæmorrhage took place. The further history of this case is sad in the extreme. Six weeks after operation the left kidney was felt to be enlarged, the first definite indication of the site of the disease. The patient was warned of the probable nature of the disease but refused to undergo another operation so soon after the suprapubic cystotomy. Within six months death took place from metastatic deposits of sarcoma in the brain, whilst other masses were found in the lungs and liver. This patient lost his only chance by neglect to verify the diagnosis by cystoscopy, for though he was quite willing to submit to one operation he could not bring himself to face a second within six weeks of a first so barren in results. Had he been kept at rest until the bleeding had sufficiently abated to render cystoscopy possible the kidney would have been removed with a fair chance of success.

Conclusions.—The cases here described have been chosen from the records of cystoscopies which I have made during the past five years. They are sufficiently striking to vindicate the position which I claim for the cystoscope as a diagnostic instrument of the first importance. I could narrate many other cases of a like nature which I have examined, or have seen, in the practice of other surgeons. The only objections which can be urged against the cystoscope are those which apply with equal directness to metal instruments of a like calibre. In the great majority of cases the examination can be conducted under local anæsthesia induced by the injection of eucaine, and I can deliberately state that I have never yet seen more serious after-results from the proper use of the cystoscope than those which might follow the passage of any other instrument. In cases of disease of the urinary organs where the diagnosis is doubtful I consider that no examination is complete which does not include the use of electric cystoscopy.

I wish to express my acknowledgments to Mr. Reginald Harrison for permission to publish the cases.

Lower Berkeley-street, W.

AN UNUSUAL CASE OF MATTING OF INTESTINES FOR WHICH DOUBLE ENTERECTOMY WAS PERFORMED SUCCESSFULLY.

BY BILTON POLLARD, B.S. LOND., F.R.C.S. ENG.,
SURGEON TO UNIVERSITY COLLEGE HOSPITAL.

DOUBLE enterectomy is, I believe, very rarely needed except in cases of gunshot injury and so I think that a case in which such an extensive operation was performed for disease is worthy of record. But apart from the unusual character of this case I think that all cases of operation on the intestines should be reported for some time longer in order that we may be provided with facts from which to determine, in the first place, the symptoms which in chronic cases should lead to an exploratory operation and, in the second place, that we may, by comparing cases with one another, both as regards the operative technique adopted and the immediate and remote results of the operations, arrive at more definite conclusions with regard to these matters than have hitherto been formulated.

I propose shortly to publish a series of cases in which I removed portions of the colon for chronic intestinal obstruction due to malignant disease, but this case, although it involved the removal of several inches of the colon, does not properly belong to that series because there was no malignant disease in this case and because it was necessary in addition to the piece of large intestine to remove three feet of small intestine.

The patient was a woman, aged 57 years, whom I saw in consultation with Dr. J. P. A. Gabb on May 25th, 1902. Her father died from cancer. She herself had been healthy and free from any definite symptoms of illness till November, 1901. She then only complained of vague dyspeptic symptoms with pain about the umbilicus and epigastrium. During the winter months she lost flesh and her complexion became gradually more and more sallow. In March, 1902, she was taken ill with influenza, complicated with diarrhœa and sickness. On March 24th a swelling was detected in the abdomen and Dr. Gabb was called in in consultation with a view to operation. The swelling proved to be due to flatulent distension of intestinal coils—very probably the ball of intestinal coils removed at the operation. The bowels were not obstructed and there was no visible peristalsis. The patient returned home in order to be under Dr. Gabb's care on the 27th and from that date to May 11th she was always more or less ailing with pains in the lower part of the abdomen which had no special relation to food, and she was always more or less constipated. The bowels always responded to aperients and there was never any real obstruction, although there was a good deal of flatulent distension

of the bowels. On May 11th a severe hæmorrhage from the bowels occurred. This was not repeated. The patient was now seen by Dr. J. F. Goodhart who thought that there was probably a malignant growth in the upper part of the rectum and pronounced the case to be one for surgical treatment. I saw the patient with Dr. Gabb on the 25th. There was some general distension of the abdomen but no obstruction. No lump could be made out in the course of the colon. The rectum, as far as could be reached by the finger, was normal, but feeling through the bowel at the extreme limit to which the finger could reach, it was possible to detect an indistinct swelling which suggested the presence of a growth in the bowel higher up either in the sigmoid loop of the colon or in the upper part of the rectum. The frequent abdominal pains, the flatulent distension of the bowels, the loss of flesh, and the hæmorrhage all tended to support this view.

On May 27th I operated at the patient's home. Dr. Dudley W. Buxton gave the anæsthetic and I was assisted by Dr. Gabb and Dr. P. Levick. As no tumour could be felt with certainty a median incision below the umbilicus was made in order to explore and this proved to be the best situation which could have been selected if the condition of the intestine had been known beforehand. A hard mass surrounded by intestinal coils was at once felt in the pelvis and after the incision had been extended from the umbilicus to the top of the bladder it was possible to lift the mass out of the pelvis and to bring it out of the wound. A good idea of this mass can be obtained from the annexed reproduction of a very accurate drawing of the parts removed at

the operation. It was composed of intestinal coils which together formed a mass of about the size of two fists. On the left side was a piece of the sigmoid loop of the colon about seven inches long and on the right side were coils of ileum, measuring rather more than three feet in total length, which were adherent to one another in many places and were darkly congested. The mesentery was much thickened and the colon was very firmly adherent to it. At the site of the adhesion there was a dense mass which appeared to all of us to be a tumour of the colon which had become adherent to, and had invaded, the mesentery. The illustration depicts the appearance of the mass of intestines as seen from behind. There are more coils of the ileum on the other side which cannot be shown. The divided mesentery is well seen and the sigmoid mesocolon, which was divided close to the bowel, is sufficiently indicated for identification. The whole mass was tethered to each side of the abdomen near the iliac fossa, on the left by the sigmoid mesocolon and on the right by the mesentery. After making some attempts to separate the adhesions between some of the coils it became obvious that either the operation must be abandoned or the whole ball of adherent coils of intestine must be removed—an operation which would involve section and suture of the sigmoid loop of the colon and section and suture of the small intestine. The latter alternative being decided upon a quantity of plain sterile gauze was packed into the wound so as thoroughly to isolate the rest of the abdomen from the field of operation. The small intestine was dealt with first. The course of the blood vessels in the mesentery was noted in order to determine the places where the bowel could be divided without jeopardising its circulation, for, as shown in the illustration, the mesentery had to be divided at a considerable distance from the small intestine owing to the colon being inseparably adherent to it. It may appear from the illustration that more small intestine was removed than was absolutely necessary. This was not so, however, and, indeed, it may be said that no greater mistake can be made in enterectomy than by removing too little bowel to jeopardise the circulation in the sutured ends. The ileum on each side of the mass of adherent coils was divided between a clamp and a ligature, the ligature, of course, being placed on the piece of bowel which was going to be removed. The divided ends of the bowel were disinfected and temporarily plugged with gauze whilst the mesentery was being tied in segments and divided just beyond the place where the loop of colon was adherent to it. As a rule it is preferable to separate all the attachments of a piece of bowel to be removed before the bowel itself is divided but in this case, owing to the adhesion between the colon and the mesentery, it was difficult to tie off the mesentery before the bowel was divided. The ball of adherent coils of intestine was now free from the rest of the small bowel and was drawn over to the left side and wrapped up in gauze whilst the suturing of the small intestine was proceeded with. The bowel was sutured end to end with two rows of simple continuous sutures—a method which is just as easy to apply as, and in my opinion far safer and in every way more satisfactory than, the various mechanical contrivances which have been devised for enterorrhaphy. The two ends of the bowel were first of all fixed together by an interrupted stitch at the mesenteric attachment and then the first row of continuous stitches was inserted from the mucous surface through all the coats of the bowel. The stitch was commenced at a point about one-third of the circumference away from the mesenteric attachment and owing to the skilful way in which my assistant held the bowel, at first with his fingers and later with forceps, it was possible to stitch from the mucous surface for fully five-sixths of the circumference. The final sixth had to be stitched from the peritoneal surface which takes more time and is less efficient than stitching from the mucous surface. The weak part of the first row of stitches—the final sixth—was at a part of the bowel far away from the mesentery and therefore favourably located for being securely controlled by the second row of continuous suture which was applied from the peritoneal surface according to Lembert's method and penetrated all the coats except the mucous. The gap in the mesentery was closed by a continuous suture on each side which was also inserted according to Lembert's plan and was prolonged on to the bowel for about a third of an inch. The bowel in the neighbourhood of the suture line was dabbed with 1 in 1000 solution of perchloride of mercury and then washed with sterile salt solution. The gauze packing was now removed and the sutured bowel was dropped into the abdomen. Fresh packing was applied so as to protect the abdominal cavity and then in a manner corresponding to that just detailed the sigmoid loop of the colon was removed. After the sigmoid mesocolon had been ligatured and divided and the colon itself was cut on each side beyond the adherent part, the ball of adherent intestinal coils figured above was entirely free and was removed. The colon was united by two rows of continuous sutures and the wound in the sigmoid mesocolon was stitched upon each side. The gauze packing was then removed and the colon was returned to the abdomen. The abdominal wound was stitched up in three layers and dressed with plain sterile gauze.

About three hours after the operation the patient was recovering consciousness. There was very little shock. Her temperature was 99° F. and her pulse was 120. Dr. Gabb took charge of the patient and she got on so well that it was unnecessary for me to see her again. On the day after the operation the pulse-rate rose to 130, but by the second day it had fallen to 112, and on the third day it was as low as 90.

For the next ten days it varied between 90 and 100 and afterwards it kept below 80. The highest temperature, 99·8°, was registered on the day after the operation and on and after the second day the temperature kept below 99°. The patient remained remarkably free from pain or abdominal discomfort; she got a fair amount of sleep and no morphia was needed; her tongue kept moist and there was no abdominal distension. Rectal feeding was continued for eight days. A suppository of beef and milk peptone and a nutrient enema of an ounce of liquid peptone and three ounces of water were given alternately every four hours. The rectum was washed out daily. As soon as the patient recovered from the anæsthetic she was allowed two drachms of water by the mouth every half hour and after 24 hours she took two drachms of liquid peptone and two drachms of water every hour. On the third day the quantity was doubled and sometimes instead of it an ounce of milk-and-water was given; four ounces of milky tea were given in the afternoon and this was repeated each day. On the fourth day either an ounce of liquid peptone and an ounce of water or a similar quantity of milk-and-water was given hourly. On the seventh day the dose was doubled and given every two hours. On the eighth day, after the bowels had acted, five ounces of Benger's food were substituted for one of these feeds. The Benger's food was soon increased to eight ounces at a time, but otherwise there was not much change until the fourteenth day when egg-and-milk and pounded chicken were given. On the sixteenth day rusks were added to the dietary. It is unnecessary to follow the diet farther. On the second day after the operation flatus was passed through the rectal tube freely; on the third day, and afterwards, flatus was passed naturally and also through the rectal tube which was inserted whenever the patient felt the presence of flatus which was not readily voided. On the eighth day five ounces of olive oil were injected into the rectum and four hours later an enema of a pint of soapy water was given and the bowels acted well. On the following day the patient passed a formed motion naturally. Afterwards the bowels generally acted every other day, sometimes without and sometimes after an enema.

The abdominal wound healed by first intention and the stitches were removed on the eleventh day after the operation. On the twenty-second day the patient left her bed and lay on the couch for three hours. Nine months after the operation, except that her bowels were rather constipated, the patient was quite well—indeed, she was reported to be enjoying better health than she had done for several years.

It only remains to add that the diagnosis of carcinoma which was made on the symptoms and which was thought to have been verified at the operation was incorrect. The mucous membrane of the bowel looked quite healthy and the mass between the colon and the mesentery was due to inflammatory thickening. The bleeding had probably taken place from the small bowel, the coils of which were greatly congested. This may have resulted from pressure on the veins owing to a slight twist of the mesenteric pedicle of the mass of intestinal coils. There is nothing in the patient's history to explain the cause of the matting together of the intestinal coils. The pelvic organs seemed to be normal and there were no adhesions between other intestinal coils. The rest of the abdomen seemed to be quite healthy. The specimen is now in the museum of University College, London.

Harley-street, W.

TREATMENT OF A FORMIDABLE CASE OF SPRUE BY DIET; THE VALUE OF STRAWBERRIES.

BY EDWARD H. YOUNG, M.D. DURH., L.R.C.P. LOND., M.R.C.S. ENG., L.S.A.

A WOMAN, aged 59 years, whose medical history is detailed below, came under my care in 1901. It appeared that she had lived in India for some 24 or 25 years with intervals when she came to England to visit her children. She was never a strong woman, but she had never suffered from any serious disease either in England or in India. She finally left India ten years before the present illness. For the two years prior to coming under my care she had much anxiety about the health of one of her children. Always a woman of extremely active habits, she ate very little and became anæmic and sallow, over-exertion often producing attacks of migraine and neuralgia. In 1900 the patient had had a prolonged and exhausting period in nursing another of her children through an attack of acute rheumatism. Very early in 1901 she suffered from a very serious attack of influenza, towards the close of which she was attacked with a nocturnal diarrhœa. Her convalescence from the influenza was slow and as its symptoms disappeared, those of sprue became apparent. The diagnosis of sprue was confirmed by Dr. John Anderson, C.I.E., who saw the patient at the time and again a few weeks later. The patient steadily refused to adopt a milk diet, though strongly urged to do so by Dr. Anderson, and her diet consisted chiefly of meat-juice, plasmon, soup, oranges, grapes, and plantains, a little bread-and-milk and milk puddings. From the onset of the symptoms of sprue the patient had steadily wasted and lost strength. I learned that she had been a well set-up and active woman of about 8½ stones' weight and that she looked considerably below her real age. She had been wholly confined to bed and was removed for change—a proceeding which was attended with grave risk.

I first saw the patient, who was lying in bed, on Nov. 2nd, 1901. She complained chiefly of severe cramps in the limbs, more especially on the left side, which came on the previous evening. There were further complaints of chronic diarrhœa, soreness and rawness of the mouth, and progressive weakness and loss of flesh. She was so emaciated that the bones projected under the skin and the wasted muscles were easily traced. The tongue was denuded of epithelium, with ulceration at the tip and sides. The abdomen was distended and slightly tender on pressure; its attenuated parietes displayed the coils of distended intestine. The liver and spleen were not definable on account of the abdominal distension. The motions were of the typical sprue character—very large, pultaceous, ochreous, sour-smelling, frothy, and very frequent. The heart sounds were normal and the lungs also were normal. The pulse was 104; it was regular in force and rhythm and of good tension. The temperature was 100·6° F. The urine was normal. The hands, the feet, the arms, and the legs were rigid in the typical position of tetany, causing the patient great agony. A hypodermic injection of morphia was given; it afforded marked relief to the painful spasms and produced some sleep.

During November there was a steady decline in strength, but the patient still insisted on getting out of bed unassisted. With the view of keeping the carbohydrates as low as possible the diet was of a mixed character, consisting of soup, fish, game, &c., but small quantities of bread and porridge were allowed, with grapes, plantains, and stewed pears. The actual amount of ingesta was, however, very small, most things being merely tasted or inspected and then put aside. The patient still determinedly declined to adopt a milk diet, though this was repeatedly urged upon her. There were one severe repetition of the attack of tetany and one or two minor ones. On the first of these occasions a spasm of the larynx caused much alarm and necessitated the administration of chloroform. The medical treatment was purely symptomatic. Bromide of potassium and antipyrin had some effect in relieving the minor spasms. Salicylate of bismuth was tried as an intestinal antiseptic but proved practically useless. Opiates in the smallest quantities, combined with other drugs, or otherwise, proved hurtful and the mildest astringents also did manifest harm when once or twice cautiously tried. The gradual and progressive decline in the patient's strength continued in December and the emaciation became extreme. There were two or three attacks of the tetany but none of these were severe. The pulse varied remarkably in character, being sometimes soft and then hard and frequently intermittent, all within a few hours. It was repeatedly noticed that hardness and intermittency of pulse almost invariably preceded a very large fermented motion. The temperature was generally subnormal in the mornings and about from 99° to 99·5° in the evenings but was easily disturbed. The attacks of tetany usually sent it higher. Towards the end of December the number of motions averaged 6·5 per diem. In size they varied considerably from about 12 ounces of a large, whitish, thick, pultaceous, mass, which moved slowly on the vessel being tilted, to six or seven ounces of a whitish frothy fluid. These latter, if

allowed to stand for an hour or two, slowly changed colour to a light brown. The food and treatment were continued on the same lines as during November and really amounted to a series of experiments based on the principle of excluding starch as much as possible.

Early in January, 1902, an attempt was made to introduce raw minced meat as the staple and almost exclusive food. For a few days the number of motions diminished but soon rose again; they assumed, however, a less sprue-like character, becoming more watery and more frequent, and this increased the exhaustion of the patient. The temperature still kept irregular, often only just above 97° in the morning and up to 99·6° at night. On the 10th a passing disturbance sent the temperature up to 102·6° and the pulse to 108, but they declined in a few hours. From this date, however, the patient no longer insisted on getting out of bed. Attacks of breathlessness, even when lying still, became now more frequent and perspirations, at irregular times, were very troublesome. About the middle of the month the various preparations of plasmon were tried for ten days, but no beneficial result was apparent, the patient steadily losing ground. On the 21st there was a severe attack of tetany lasting for 18 hours and on the 23rd the whole of the body was affected by the spasm. The motions now averaged eight daily. Sleepless nights required occasional doses of trional and brandy was given during periods of great prostation. On the 26th the patient at last consented to go on a *milk diet only*. For the first two days three pints were given each day and then the quantity was increased to three and a half pints. The relief to the purgation was immediate, the number of motions diminishing by one-half during the first week. On Feb. 1st the milk was increased to four pints daily. The number of motions during the first week of this month averaged only three daily, but some of them still maintained the character of sprue. On the 7th the milk was increased to five pints, but it then caused digestive disturbance and had to be diminished. For the succeeding fortnight the amount of milk given was daily regulated, but it was found impossible for the patient to manage more than about four and a quarter pints and on some days even less. The number of motions diminished to an average of two daily during this period and in character they became larger and semi-solid and they lost their fermented appearance. The symptoms of tetany disappeared. It was very clear, however, that asthenia was steadily increasing; the patient lost strength and flesh markedly, becoming as she well expressed it "more skully," and although her mental attitude was still courageous it was found necessary to give stimulants more frequently on account of cardiac and general weakness. It was quite evident that although the disease could be controlled by the milk yet the patient could not digest or absorb sufficient nourishment from it to sustain life. Probably at this period her weight did not exceed 64 pounds, whereas her normal weight in house clothes was 120 pounds. This is a point upon which I shall bring definite evidence presently. On Feb. 21st (after three and a half weeks' pure milk diet) an attempt was made to combat the manifestly increasing asthenia by adding the white of two eggs beaten up with water; two drachms of arrowroot were also added to the daily allowance of milk. This addition was well borne for a week, but on the 28th a severe attack of tympanites, accompanied by frothy pultaceous motions, caused the arrowroot to be stopped. On March 1st six drachms of cream were added to the milk and egg albumin diet. During the next few days an alarm was caused by the great prostration of the patient. Meat juice was added to the above but marked indigestion and an increase of the motions necessitated a return to the milk and egg albumin only. The patient's state was then most precarious. A little bovril was now given occasionally instead of alcohol as a stimulant and with better effect. On the milk and egg albumin diet the motions again became fewer (averaging 1·2 per diem for ten days), semi-solid, and not frothy, but the patient remained in the same utterly prostrate condition, gaining neither flesh nor strength but, on the contrary, losing ground. On the 18th it was decided to try the addition of a small quantity of stale bread well soaked in hot water and then firmly squeezed through muslin. An ounce of this was at first given daily and as there was no untoward effect it was raised to two ounces on the 23rd and to three ounces on the 25th, when an orange was also allowed. An increase of bread on the 28th to four and a half ounces had to be withdrawn on account of a return of the diarrhœa and an endeavour to substitute rusks for bread led to abdominal distension. The notes at the end of this month, however, were of a more hopeful character. Since the addition of bread the patient looked brighter and the skin was more elastic and not so muddy in appearance; although one could not definitely say that there was a gain in weight, yet the countenance certainly did not look so shrunken. The patient slept better, did not require a stimulant so often, and there was no return of the tetany. She still felt the exhaustion of being moved in bed and the attacks of both breathlessness and perspiration were present. Subnormal temperatures were not so frequent and the pulse was steadier and less intermittent. The conclusion was that bread gave strength, but that when pushed beyond from two to two and a half ounces daily it caused a return of the characteristic diarrhœa. Early in April the diet consisted of 91 ounces of milk, the white of two or three eggs, from two to two and a half ounces of bread, and an orange. A slight return of diarrhœa on the 5th caused the bread to be stopped for four days, when it was resumed in smaller quantities (one ounce). On the 10th the patient was weighed and found to be 70½ pounds. Previously to this weighing was not attempted owing to her weak and prostrate condition. On the 13th six ounces of chicken broth were added to the dietary. By the 14th the bread had been worked up to three ounces and by the 24th to four and a half ounces. On the 30th her weight was 74¼ lb. The note at the end of the month stated that the patient was decidedly brighter, with more vitality and strength. She could sit up in bed for a few minutes and even slip out of bed unassisted, but required help to return. Bovril was not now required. She no longer complained of breathlessness and palpitation or of abdominal and thoracic pain. The pulse and temperature were steadily normal. The soreness of the mouth was gone and the epithelium was returning on the tongue. There was no return of tetany and the abdomen was less distended. Diarrhœa was in abeyance, as there had been only 31 motions during the month as compared with 42 in March, 62 in February, and 188 in January. The motions, however, were still heaped, semi-solid, and putty-like masses. A small boiled trout (about three-quarters of an ounce) was allowed on May 1st with no apparent harm. The giving of a small custard pudding on the 4th at once caused trouble in the way of diarrhœa. A small trout was given on the 8th and again on the 9th, but returning diarrhœa led to the prohibition of this diet and the reduction of the bread to two and a half ounces. On the 13th the patient's weight was 75½ pounds. On the 16th an ounce of boiled sole was given but it was followed by five loose motions in the succeeding 24 hours and the patient was put on milk only for two days. Although the motions were not of the character of true sprue, but more of those of an ordinary intestinal catarrh, there was a distinct loss of vitality and strength. The patient did not look so well, was less bright and cheerful, the pulse again tended to intermittency, and there was a slight return of tetany and abdominal distention. Her weight on the 19th was 74 pounds—a loss of one and a half pounds in six days. Altogether there was cause for anxiety.

Fortunately at this period the opportunity occurred to put in practice the suggestion of Dr. Anderson that strawberries should be tried. On May 21st three strawberries only were given and their effect was watched, none being given again until the 25th when 12 were allowed. On the 26th the patient's weight was 74½ pounds. From this date strawberries were given daily and in increasing quantities. Up to the time of the giving of strawberries certain points were prominent—viz., (1) that milk diet alone would control the disease; (2) that the patient when kept on milk alone markedly declined in strength and vitality—so markedly, in fact, that anxious as one was to continue it exclusively it was quite clear that such a course was fraught with the utmost danger; (3) that the addition of mashed bread to the milk decidedly added to the strength, but was attended by a return of the motions of the character of sprue when given beyond a small and variable quantity during the 24 hours; and (4) that cautious attempts of addition to the dietary by small quantities of fish, custard, or arrowroot at once led to trouble. It was at this period of the case—when one felt that the disease was only slumbering but by no means cured, when the patient's condition evidently required an advance in her dietary and yet the paths of advance were blocked—that the strawberries were started. In June the daily diet for the first week was 84½ ounces of milk, from four and a half to five ounces of bread, two ounces of cream, and a pound of strawberries. From the 11th onward strawberries were allowed

ad lib., and one and a half pounds were daily consumed. The bread was steadily increased, so that by the 21st nine ounces were taken daily and by the 29th 11½ ounces. The strawberries certainly enabled much more bread to be eaten. The milk and cream remained the same throughout the month. From the time of giving the strawberries the motions entirely changed. For the three weeks preceding the giving of the fruit the number of motions was 45, with an estimated aggregate weight of 186½ ounces. For the three weeks following the number was only 21, with an estimated weight of 113 ounces. In character they also altered, became less bulky, more dehydrated, and towards the middle of the month they were entirely formed and natural in appearance. The strawberry colouring matter tinged the urine in which the motions lay. The note at the end of the month stated that the condition of the patient had entirely changed. She no longer looked ill and early in the month she began sewing and reading in bed and towards the end of the month she was able to walk a little without assistance and reclined on a couch on the verandah for a couple of hours daily. There has been a steady gain in weight, at first one and a half pounds weekly, then two and a half pounds, so that now she weighs 83¼ pounds. All things were favourable during July. Milk, bread, cream, and one and a half pounds of strawberries were taken daily as in the latter part of June, but porridge, rusks, and butter with the bread were also allowed. The patient's strength was greatly improved and she walked gently about the room with ease. Her weight at the end of the month was 96 pounds. The progress in August was still satisfactory. The patient now moved about the house and did light work, &c. The bowel condition remained normal and there was no trace of sprue although the strawberries failed early in the month and the patient was on a more varied diet, including potatoes. Her weight at the end of the month was 106 pounds. Little need be added to the above. For the next three or four months the patient was just over eight stones in weight, there was no return of any symptom of sprue, although she was practically on a non-restricted diet. In the autumn she took drives when the weather was favourable.

The above case presents certain features which are of interest. 1. The remarkable change in the condition of the patient after the addition to the diet of strawberries which distinctly appeared to act as a specific in the disease. Directly strawberries were given it was found possible to increase the bread, which previously could only be given in small quantities and even then with risk, to practically any extent without there being any return of sprue symptoms. 2. The attacks of tetany, so alarming in this case, are not mentioned as a complication in the articles on the disease in Allbutt's System and Quain's Dictionary, but of course one knows that tetany may follow some cases of chronic exhausting diarrhœa. The age of the patient is also, I believe, unusual for tetany. 3. The uniformity with which the pulse became peculiarly hard and always then intermittent before the advent of a large fermented motion was more than a coincidence. So uniform was this that it was always possible to predict the coming event even though things may have been quite quiescent for some time previously. 4. In the same way the temperature conveyed information not to be disregarded. When the tendency to tetany prevailed a rising temperature always put me upon my guard and enabled me to adopt timely precautions. There was one curious point about the temperature. A few days after strawberries were commenced the temperature rose slightly in the mornings, reaching 99°, while the evening temperature generally kept lower. This continued for some time after the strawberries were stopped. 5. The direction in the text-books of "milk only" in sprue is not of universal application in advanced cases of the disease. Had it been further continued in the present patient I feel sure that the ending would have been disastrous.

One pathological question suggested itself strongly. What is the source of the large quantity of matter passed from the bowel in these cases? Taking it at a minimum that the motions averaged eight ounces in weight and that there were six of them daily, 48 ounces daily, or 90 pounds per month, of pultaceous material were expelled by the bowel of a patient certainly under 70 pounds in weight and who was taking a minimal quantity of food. I have failed to satisfy myself of any adequate explanation of this fact.

Okehampton.

ADVANCES IN THE TREATMENT OF PARALYTIC DEFORMITIES.[1]

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IN bringing this subject to the notice of the Fellows of this society to-night I may be pardoned for dwelling upon the question somewhat fully. It is necessary to specify the varieties of paralytic deformities which will pass under review. These are: (1) those arising from infantile paralysis or anterior-poliomyelitis; (2) those due to infantile spastic paralysis, infantile hemiplegia, and cerebral diplegia; and (3) those due to injuries of nerves, such as the Erb-Duchenne type of palsy, affecting the upper root of the brachial plexus, or lesions arising from crushing or severance of nerve trunks.

To take the deformities succeeding infantile paralysis, there are certain features in connexion with the loss of muscular power and wasting immediately following the onset of the paralytic attack which are noteworthy. One great characteristic of this form of paralysis is its selective tendency. It picks out groups of muscles or a single muscle in a group, or single muscles in several groups, and even individual fibres of a single muscle. Another point, which I have verified by a somewhat extended clinical experience, is that in any given case it is impossible to foretell the extent to which recovery will take place, and one is continually surprised from time to time by seeing an apparently hopeless limb resume under appropriate treatment its entire, or nearly entire, functions. If it be permitted to step aside for a moment to indicate the means by which the fullest amount of recovery can be obtained it is this: the surgeon should not on any account permit the affected muscles to be over-stretched, either by the pull of their opponents or by the action of gravity; or, to put it into other words, to get the maximum amount of recovery in an affected muscle it must be relaxed to its full extent. Unfortunately, it does not often happen to us as surgeons that we have the opportunity of seeing cases of infantile paralysis in the early stages. Too often they are brought to us when deformity has set in, profound atrophic changes have taken place in muscle fibres, and much of the possible recovery in the remaining unaffected fibres has been discounted by over-stretching for months or years. Such is the class of case with which we have mostly to deal.

Now in infantile paralysis the limb is always pulled towards the side of the stronger muscles and away from the weaker muscles. The result is twofold: firstly, a want of balance of power around the joint; and, secondly, a certain amount of power misused or running to waste. The older method of treatment of these cases by tenotomy and lengthening of the tendons of the sound muscles and subsequent retention of the limb in a good position by means of weighty apparatus was imperfect, in that there were a failure of insight into the factors at work and a want of grasp of the possibilities presented by the remaining normal structures. It is in this relation that tendon implantation, tendon grafting, or transference of muscular power exhibits such an advance on the older methods. In the most severe cases resulting from anterior poliomyelitis all the muscles around a joint are hopelessly damaged and in such instances it is sound mechanics to fix the joint by artificial ankylosis or arthrodesis in its best or most useful position—as, for example, fixation of the ankle-joint at right angles.

To enter more particularly into the methods of tendon-grafting and arthrodesis we will take them consecutively, as they are adapted for varying degrees of deformity following poliomyelitis.

Tendon grafting or muscle transference.—Definition.—By this is meant the reinforcement of a paralysed muscle by attaching to its tendon either the part or the whole of the tendon of a healthy muscle. The ways and means of attachment are various and will be alluded to presently.

Bibliography.—The operation originated with Nicoladoni in 1882, who in a case of paralytic talipes calcaneus attached the peronei to the tendo Achillis with a good result. In 1892 Parish[2] and Drobnik[3] applied the same

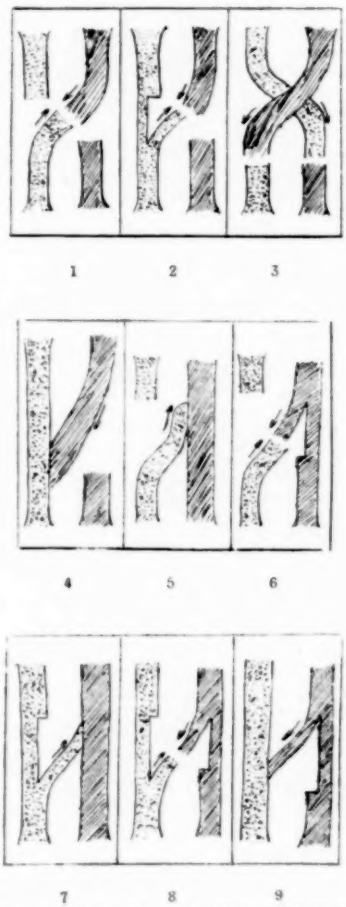
[1] A paper read before the Hunterian Society on Nov. 12th, 1902.
[2] New York Medical Journal, 1892.
[3] Zeitschrift für Chirurgie, Band xliii., Sec. 470.

method to other forms of club-foot. In 1894 Winkelmann grafted a strip of the tendo Achillis on to the peronei and he was the first to publish and to analyse a series of cases, 16 in all. Since then Goldthwaite and other American orthopædic surgeons have done good work on the subject. Mr. F. S. Eve [4] has recorded four cases on which he had operated and I have performed 57 of these operations, some of which are recorded in the *British Medical Journal*, 1899 and 1901. In the *Munchener Medicinische Wochenschrift* of April 25th, 1899, Vulpius gives his experience of 60 cases and in the same periodical in April, 1900, Fritz Lange contributes an interesting article on the subject with excellent illustrations. Ernst Künick [5] reviews the subject and discusses details of four different methods of tendon transplantation. Karl Bruns [6] has employed the same method to prevent contraction after excision and erasion of the knee. Mainzer [7] writes on the subject of indirect transplantation—that is, instead of joining the proximal end of the active to the distal end of the paralysed muscle, owing to the distance at which they are apart, he transferred the proximal end of the sound muscle to a neighbouring paralytic tendon, then divided the latter below the site of junction, and transferred the conjoint parts into the distal end of that tendon which he wished to reinforce. Lange, [8] owing to the distance between the sound and the paralysed tendon, made an artificial tendon of silk, following the example of Glück, [9] who in 1892 had used bundles of silkworm gut to bridge over the gap after division of tendons in injuries. And be it noted Kümmell [10] in 1896 found that in a case so treated the strand of silkworm gut had become converted into fibrous tissue. Jochner [11] has succeeded in bridging a gap of two and a half inches in the extensor communis digitorum by a similar method.

The *rationale* of the operation is first of all to utilise what is ill-directed voluntary movement, and secondly, to restore the balance of muscle so far as possible in the affected part. But it will be evident that the joint can never be a fully strong one, since the amount of power at the disposal of the surgeon has been diminished by disease. Yet it must be conceded that a well-balanced weak joint is better than an ill-balanced and weak one. And, further, possibly one of the greatest benefits of all, much of the necessity of resorting to the instrument maker has disappeared. There are, of course, anatomical and surgical limitations in the transference of tendons from one side of a joint to another, although most of the difficulties can be overcome by the indirect method alluded to above or by the use of silk to elongate the tendon to be carried into a new position. It also requires care to regulate to a nicety the amount of power transferred and occasionally it happens that some time after the operation an apparently functionless muscle, when it is no longer unduly stretched by over-action of its opponents, will recover partially and disturb the balance which has been obtained.

Cerebration after tendon grafting.—In discussing the subject with neurologists and with physicians in general we are at once met with the question: What about the brain—what happens to it? For my own part, and speaking from experience, I do not think that is a factor which requires discussion. The brain sends out an impulse which is carried to the muscle and the nature of the resulting movement depends upon the origin and insertion of that muscle, in the case of the limb the insertion being near or at the part to be moved. But what is really wanted in these cases is to insure a useful insertion. To take a homely illustration. A train has for years run from Euston to Manchester until one day it is diverted at Crewe, the junction on to the Liverpool section, at the will of the signalman and duly arrives at that city. The fact that it had always been accustomed to travel along the rail to Manchester in no wise prevents it arriving at Liverpool when it is so directed. So with the nerve impulse after the insertion of the muscle has been changed, and I take it that what happens in the brain is that the brain cells have to become appreciative and directive of new combinations of movements by education.

Various methods of tendon transplantation.—These are numerous and are being constantly added to by the ingenuity of surgeons, but they are readily understood by reference to the accompanying diagrams which show the scheme of tendon transplantation according to Vulpius. Of them the most useful are No. 4, where the whole of the proximal end of the strong tendon is implanted directly into the paralysed one; No. 6, where a part of the strong tendon is implanted into the distal end of the paralysed one; and



Diagrams showing the scheme of methods of tendon transplantation, after Vulpius. Nine different methods are illustrated. The reinforcing tendon is in the darker shading; the tendon of the paralysed muscle is in the dotted shading.

No. 9, where part of the strong tendon is implanted into the intact paralysed one. To these should be added the indirect method alluded to above, the method of periosteal implantation, which is very valuable, and the artificial elongation by means of silk of the transplanted tendon, and lateral approximation. So far as I am aware there are at least 13 methods in vogue, nine of which are figured in the accompanying diagrams. I may now proceed to describe individual instances where tendon grafting is applicable. Talipes calcaneo-valgus can be treated by insertion of the peroneus longus into the inner side of the tendo Achillis. Talipes calcaneo varus is treated by the insertion of the flexor longus digitorum into the outer side of the tendo Achillis, uniting the distal part of the cut flexor longus digitorum with the pollicis. Talipes equino-valgus is treated by splitting the tendo Achillis and the gastrocnemius up as far as the junction of the two heads of the latter and then inserting the inner portion of muscle and tendon either into the tibialis posticus or, better still, bringing it well forwards and fixing it on the under aspect of the scaphoid bone. This relieves the valgus portion of the deformity. The equinus portion is

[4] Brit. Med. Jour., Oct. 15th, 1898.
[5] Munchener Medicinische Wochenschrift, May 27th, 1902.
[6] Centralblatt tur Chirurgie, Feb. 9th, 1901.
[7] Munchener Medicinische Wochenschrift, May 27th, 1902.
[8] Ibid., Jan. 7th, 1902.
[9] Practitioner, vol. lxix., p. 360.
[10] Ibid.
[11] Ibid.

readily rectified by section of the remaining half of the tendo Achillis. Talipes valgus may be treated by transplanting the proximal part of the peroneus brevis into the tibialis anticus above the ankle-joint and, if necessary, tenotomising the peroneus longus; and talipes varus may be treated by transplanting the tibialis anticus or extensor proprius pollicis into the peroneus brevis or longus above the ankle.

So much for the feet. But tendon-grafting finds a much wider use. It not infrequently happens that the extensor cruris is paralysed, while the sartorius or the ham-strings or the adductors escape. I have divided the sartorius just above its insertion and inserted it into the top of the patella on four occasions, with the result of enabling the patient to maintain the knee firm in standing and to advance the foot in walking. In other cases where the sartorius is defective I have brought a portion of the semi-membranosus from the inner side of the joint and a portion of the biceps from the outer side of the joint and inserted them into the top of the patella with great success. Paralytic conditions of the hand and wrist lend themselves well to this method, and I shall allude presently to a case in which transplantation of part of the triceps cubitis into the biceps was wonderfully effective.

Preliminary points.—Before it is decided to perform the operation the case must be carefully studied and a definite plan of procedure formulated. The electrical reactions of the muscles should be previously ascertained and an attempt made to estimate the strength of those which it is intended to transplant. In the case of the foot all secondary contractions, such, for instance, as contraction of the plantar fascia, giving rise to pes cavus, should be remedied. For mechanical reasons it is advisable to select the reinforcing tendon from a muscle whose line of action is as nearly parallel as possible with that of the muscle to be reinforced. For instance, in a case of pure paralytic valgus it is better to graft a strip from the tendo Achillis into the tibialis posticus rather than to bring the tendon of the peroneus longus across the front of the ankle and insert it into the tibialis anticus. It is also important to remember that muscles, which before the operation appear to be hopelessly paralysed, exhibit after the operation signs of returning strength. The operation is rarely called for when a single muscle is paralysed, nor should it be done when nearly all the muscles round the joints are implicated. The latter cases are only suitable for arthrodesis; and, indeed, there is a fear that an indiscriminate use of this method of transplantation may lead to unsatisfactory results in some cases and so bring the operation into undeserved discredit. The whole point is in the careful choice of cases.

In selecting a healthy muscle for reinforcing a paralysed one it is advisable that the one chosen should belong to the same group, if possible, as the paralysed one, the reason being that it is nearest and restoration of voluntary function is more quickly and perfectly secured. Then, too, the reinforcing tendon should be carried as directly as possible to the paralysed muscle and not bent round at an angle, a manœuvre which has the effect of considerably lessening the transfer of power. For instance, if the peroneus brevis were used to reinforce the extensor communis digitorum, the former should be attached to the latter above the ankle and not below and in front of the external malleolus. When an opponent of a paralysed muscle is used it gives emphasis to this principle—namely, that by selecting one of the opponents of a paralysed muscle we not only reinforce that weak muscle, but we lessen the antagonism which exists between the two groups; since by transferring, for example, the insertion of the peroneus longus in a case of paralytic talipes valgus from the outer to the inner border of the foot we effect an equality between the forces acting upon the two borders. Finally, it should be unnecessary in these latter days to insist upon the absolute necessity of perfect asepsis, inasmuch as the success or failure of the operation depends upon healing by primary union.

Technique of the operation.—After the skin has been rendered completely aseptic—and if obscuring hæmorrhage be feared an Esmarch's bandage has been applied—a suitable incision is made of such a length and in such a position as to give free access to the tendons to be operated upon. In many cases a single incision will suffice, but it sometimes happens that, to avoid a single large incision, two smaller ones are made—as, for instance, when the peroneus brevis is transferred to the inner border of the foot. In that case one incision is made over the front of the fibula and a second over the scaphoid bone. By burrowing through the subcutaneous tissues of the dorsum of the foot with a director a channel is made for the passage of the peroneus brevis tendon to the scaphoid. It is curious to remark that no adhesion takes place of the tendon transplanted in these circumstances to the subcutaneous tissue, doubtless owing to the endothelium on its surface, and this teaches the necessity of very careful handling of the tendons. But it will be better to illustrate the operative procedure by a simple example, such as, for instance, the implantation of the peroneus longus into the tendo Achillis. The two tendons are exposed by an incision about four inches in length made above the external malleolus and between them. Their sheaths are quickly and deftly opened, and a longitudinal aperture is made through the tendo Achillis at its thickest part. The peroneus longus tendon is then severed just above the external malleolus, taking care that there is sufficient length to be passed through the tendo Achillis and to allow of the end of the reinforcing tendon to be sewn to the tendo Achillis. The foot should now be placed in the position which it is desired subsequently to obtain, that is somewhat in equinus, and a silk ligature having been threaded through the proximal end of the peroneus longus tendon it is drawn through the tendo Achillis from the front to the back and then sewn to the posterior aspect. A very important question arises as to the tension of the reinforcing tendon at the time of stitching. Over-extension is to be avoided, because experience has shown that the muscle loses its contractile power subsequently. I am accustomed to pull upon the proximal end of the tendon to ascertain the elasticity of the muscle. The tension of the reinforcing muscle and tendon should be gauged thus: it should be pulled upon so far and for so long as it shows signs of complete resiliency, and no further—at least, such is my experience. As to the material for stitching one tendon into another, some have used catgut and others kangaroo tendon. I have preferred strands of fine Chinese silk prepared as follows. The silk is boiled for half an hour and is then placed in a solution of 1 in 1000 potassio-mercuric iodide in spirit for a week. With these precautions I have never on any occasion had the slightest trouble with the silk in the way of its attempting to work out. The Esmarch's bandage is taken off, all hæmorrhage is arrested, and the wound is closed.

The value and necessity of re-shaping the joint surfaces.—If a foot has been for several years in a position of valgus or varus the joint surfaces, especially at the ankle, undergo alterations in shape. And to make the operation complete and to overcome fully the tendency of the foot to assume its old position, despite the tendon grafting, I have found it necessary to open the joint and to remove a wedge-shaped piece from one of the lateral aspects of the articular surface of the astragalus. In the case of valgus I remove a wedge-shaped piece from the outer side of the astragalus, the base of the wedge being upwards. In the case of varus the base of the wedge is downwards and situated well below the tip of the external malleolus. This procedure interferes in no way with the mobility of the joint. The removal of a wedge I carried out for the first time in July last in a case of calcaneo-valgus with great success.

After treatment.—The foot or limb is placed in the fully corrected position, and therefore in such a way that there is no tension whatever on the reinforcing muscle. It is left thus for six weeks to insure good union of tendon. It is worthy of note that in many cases the muscles, the tendons of which have been used for transplantation, show the reaction of degeneration immediately after the operation and the normal reaction does not return for from six to eight weeks. It may appear that in some cases, immediately on removing the splint or plaster-of-Paris, over-correction has been made and the reinforcing tendon is so tight as to seem to demand tenotomy. If it has not been over-stretched at the time of operation, no interference is called for, as with free movements of the part the muscle readily adapts itself to the length required; and this leads on to another question—namely, Can all retentive apparatus be dispensed with at once? It is better not to do so, because there is a strong tendency for the reinforcing muscle to become over-stretched and weak on account of the extra work it has to do. It is therefore well to employ a light retentive apparatus to assist in keeping the foot in its new position. But at the same time the ordinary physiological measures should not be neglected. Daily massage of the reinforcing muscle or muscles should be assiduously practised and the application

of the interrupted current appears to be of value. When it is evident that the muscle is undergoing hypertrophy then the supporting apparatus should be dispensed with, and it is remarkable how exceedingly great is the overgrowth of such a transplanted muscle when properly tended and coaxed for several months after the operation. It must be acknowledged that muscle-grafting has the greatest possibilities in the future now that we have grasped the main details of the procedure. It is applicable in most parts of the body and we have been of late endeavouring to stimulate our ophthalmic friends to use it in cases of paralytic strabismus. After careful consideration I can see no reason myself why we should not take the leap from muscles to nerves and graft nerves in the same way.

Arthrodesis.—Arthrodesis, or artificial ankylosis of a joint, is, as I have mentioned, adapted for those cases where the joint is flail-like owing to complete loss of power of the muscles around it. It has been performed chiefly in the ankle but sometimes in the knee-joint. I cannot myself recommend it in the latter situation, because the long straight shaft of bone so formed is inconvenient, brittle from paralytic changes, and liable to fracture; and I would prefer either to use mechanical supports with a ring-catch at the knee-joint or to transplant portions of fascia from the sides and back of the joint into the patella. But at the ankle arthrodesis is a valuable measure, because it limits the flail-like movements, and gives a stable base of support. It may be done through various incisions, either anteriorly or posteriorly or by an antero-external incision. The essence of the operation consists in freely exposing the joint, removing completely the articular cartilage and placing the joint at a right angle. Plaster-of-Paris is then applied and left on for six weeks. It is very seldom that complete bony ankylosis follows, but the close fibrous form is a usual result, and indeed I prefer ankylosis with about ten degrees of movement. It will be at once evident how much supporting apparatus may be dispensed with, if the junction between the foot and the leg is thus secured.

Advances in the treatment of spastic paralysis.—For many years all operative interference in the infantile forms of cerebral and spinal trouble, variously classed as infantile spastic paralysis, infantile hemiplegia, and cerebral diplegia, was strongly discountenanced by physicians and neurologists; on what grounds it is difficult to say, except that the results were often not so good as they should have been. Tenotomy was sometimes seen to result in producing the opposite conditions for which the operation had been undertaken. This lamentable result was not due to the tenotomy, but to a want of grasp of the processes concerned in the union of tendons. Now in spastic paralysis the conditions are totally different to those obtaining in infantile paralysis. Instead of healthy and paralysed muscles we have to deal with healthy muscles on the one hand and over-stimulated and contracted muscles on the other hand. If, after section of the tendo Achillis for equinus due to contracted calf muscles the exact size of the gap between the divided ends of the tendon be not carefully regulated and controlled, the action of the normal muscles on the front of the foot comes into play, dorsiflexes the foot, and causes calcaneus. The whole secret of success in tenotomy for spastic conditions consists in preventing elongation of the bond of union and carefully guarding it until the equilibrium between the opposing groups of muscles has been established. I should not recommend any operative interference under the following conditions: if the child be semi-idiotic, if fits are present, if athetotic movements exist, and not as a rule in cerebral diplegia and cases with marked atrophic and degenerative changes in the muscles; but in cases of spastic paralysis and in some of hemiplegia, if there be fair intellectual development and no fits, tenotomy of the contracted structures with suitable precautions as to after-treatment results in nothing else but good, not only physically, but mentally; for the more these patients are able to get about and are placed in touch with ordinary surroundings the more their minds expand. And I have noted also a change from an irritable to a placid condition of mind, due doubtless to the fact that they are conscious of less disability than previously. I have undertaken numerous operations with satisfactory results in these cases, but time does not permit me to go into them. I, however, wish to allude to an operation I have practised on the forearm and wrist with good results. It is detailed in the *British Medical Journal* of Sept. 7th, 1901, and consists in converting the pronator radii teres into a supinator and dividing the flexor carpi radialis at the wrist.

Muscle-grafting for conditions of paralysis due to traumatism of nerve trunks.—In cases where it is impossible to restore the continuity of nerves, as, for instance, where the cervical or dorsal nerve roots have been torn or where the gap between the ends of a severed nerve is great, muscle-grafting offers a ready means of overcoming our difficulties. A case in point, which was shown by me at the Clinical Society of London on Jan. 24th, 1902, is the following. A man, aged 56 years, had lost power in the left arm; his general health was good and he was moderate in taking alcohol. About 16 months before he fell off a van and struck the left shoulder and left side of his head and was stunned for over an hour. There were a large amount of swelling around the shoulder and some bruising. He was treated by external applications and the use of electricity for about 12 months. There was no evidence of fracture or dislocation. There was wasting of the deltoid, infraspinatus, biceps, brachialis anticus, and supinator longus on the left side, and he was quite unable to abduct the shoulder or to flex the elbow. There was entire loss of electrical excitability in these muscles and it was noted that there was anæsthesia along the outer side of the upper arm and forearm in the areas of skin supplied by the circumflex and musculo-cutaneous nerves. He was treated by application of the faradic current and hypodermic injection of strychnine and it was found on April 2nd, 1902, that the anæsthesia had disappeared, but the motor paralysis remained as before. On April 26th an examination of his condition by Dr. Purves Stewart gave the following results. The movements of the scapula were seen to be normal and sensation was good. He could rotate the humerus inwards but not outwards, and he could not abduct it. The action of the pectoralis major and minor was strong. He made feeble attempts to flex the elbow and when doing so the forearm was pronated and the wrist strongly extended to the radial side and the extensor carpi radialis longior was felt to contract. There was good extension of the elbow, with normal pronation and supination of the forearm, and the movements of the digits were good. The deltoid, infraspinatus, biceps, brachialis anticus, and supinator longus did not react either to faradism or galvanism, but the pectoralis, trapezius, and muscles of the forearm did. Dr. Purves Stewart, who had seen the case several times with Dr. William Murrell, then consulted me as to whether anything could be done surgically and I suggested muscle grafting. The patient's condition was not such as to render it safe to give a general anæsthetic. On June 10th, a 4 per cent. solution of β eucaine was injected, and an incision six inches long was made, beginning from the middle of the back of the upper arm and curving downwards and forwards over the musculo-spiral groove. The biceps muscle was found to be atrophied and a small portion was removed for microscopical examination. The external head of the triceps was laid bare and a strip one and a half inches wide and one inch thick and from three to four inches in length was made. An aperture was made through the middle of the biceps muscle, the lower end of the strip of the triceps was carried across beneath the biceps, made tense, and drawn through it and secured with kangaroo tendon sutures. The arm was put up with the elbow well flexed and by June 28th the wound was completely healed. On July 1st a second operation was undertaken. An incision from eight to nine inches long was made, commencing just below the middle of the clavicle, then passing across the tip of the acromion and downwards over the deltoid for about four inches. The clavicular part of the pectoralis major was separated distally near the humerus, and the end was carried up over the acromion and then fixed to the deltoid. As it passed over the acromion the muscle was secured by kangaroo sutures. Galvanic and faradic currents were afterwards applied. At first there was total loss of excitability to both currents, but by Oct. 10th it had returned in the grafted muscles. It was found that the portion of the triceps transplanted to form a new biceps was acting satisfactorily and the patient had acquired a good degree of flexion power, and there was no doubt that, so far as flexion was concerned, there had been a very great improvement. But although the transplanted portion of the pectoralis major could be felt to harden when attempts were made to abduct, yet the patient was unable to lift his arm away from the side without corresponding movement of the scapula. On Dec. 4th it was

found that the faradic reaction could be demonstrated in both the transplanted muscles.

Although the results in this case were not quite perfect, yet there is no doubt that the patient's condition has been much improved and the limb has been transformed into a useful one and he is able to get his living again as a carman. Unfortunately, the case was not an entirely favourable one for this kind of treatment. The man's bulk and the fatty condition of his heart, which rendered a general anæsthetic unsafe, caused the operations to be done somewhat hurriedly; while the size of the limb and its weight, with the great leverage involved, made it very difficult to obtain sufficient muscular power to secure quick and rapid movement. The trapezius, being a thin muscular sheet, was not considered to be so useful for transference as the pectoralis major, and had it been interfered with, it was thought that any attempts to abduct the arm by means of the transplanted portion would be associated with movements of the head towards the affected side. Examination of portions of muscle removed showed that they were profoundly atrophied. The sarcolemma had undergone proliferation and the individual muscle-fibres had become smaller in diameter and in many cases had lost their striation.

Weymouth-street, W.

A CASE OF GENERAL MILIARY TUBERCULOSIS; SYMPTOMS OF ACUTE MYELITIS INVOLVING THE CONUS MEDULLARIS AND CAUDA EQUINA;

WITH A NOTE ON THE VALUE OF THE ABDOMINAL ICE-BAG.

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THE patient, a man, aged 23 years, a stoker on board one of His Majesty's battleships on the China station, was admitted into the Royal Naval sick quarters at Wei-Hai-Wei on Sept. 25th, 1902, having already been under treatment for five days, suffering from an abscess over the left elbow, pain in the region of the left loin and over the sacrum, and fever, his temperature reaching 103° F. on the evening previous to admission.

On examination it was found that the patient exhibited symptoms which pointed to a lesion in the lower part of the lumbar region of the spinal cord and of the cauda equina. There was complete paralysis of the bladder and rectum and the patient complained of numbness of the scrotum and left leg, an aching pain in the back about the lumbar region, and inability to stand. All the reflexes of both lower limbs were entirely abolished and ankle-clonus could not be elicited. A certain amount of, but not complete, loss of motor power existed, most marked in the left leg, and sensation was dulled in the toes of both feet. Both lower limbs could be fully extended without lordosis resulting. There was no stiffness or rigidity of the spine and the patient could turn from side to side without pain.

The paralysis of the rectum was accompanied at first by constipation, afterwards involuntary evacuation of the fæces took place. The bladder was paralysed from the first, necessitating the passage of the catheter twice a day. Up to Oct. 2nd the urine was clear and acid in reaction; its specific gravity was about 1022 and it contained albumin in considerable quantity but no pus or blood. (The patient gave a doubtful history of previous kidney trouble.) The amount of urine secreted was about normal up to the day of death, when suppression occurred. On Oct. 2nd pus first appeared in the urine, which became alkaline, and on the 3rd hæmorrhage into the bladder took place and this continued till the patient's death, and though the amount of blood varied from day to day it was always considerable. The blood was not intimately mixed with the urine and the catheter frequently was blocked by clots. The temperature remained elevated except for two days (three or four days before death), when it fell to 99° under the influence of an abdominal ice-bag. The morning and evening readings showed a difference of about one degree and varied between 101° and 102°, and 102° and 103°. On the evening of the 9th (two days before death) the patient brought up some ounces of coffee-ground vomit and this recurred on the evening of the next day. The condition of the lower limbs remained unaltered throughout the illness, but the patient latterly had some slight loss of motor power in the arms and the hands were tremulous. He took nourishment well and for a few days seemed to show some slight improvement, but on the morning of the 11th he became suddenly worse, his breathing was very quick, irregular, and shallow, and the urine was suppressed. He did not lose consciousness but died some two hours after the above symptoms developed.

No history of syphilis was obtainable and there was no evidence of disease of the spinal column. The lumbar pain at first complained of was chiefly in the muscles of the left side and soon disappeared. Girdle pain, but only to a slight degree, was present situated about two inches below the umbilicus.

The treatment adopted was to bring the patient under the influence of mercury as quickly as possible. For this purpose inunction was used combined with administration of the drug by the mouth. As soon as symptoms of approaching salivation appeared iodide of potassium was substituted for the mercury. The bladder was washed out twice a day with boric acid lotion, the greatest precautions being taken as regards asepsis. Before withdrawing the catheter a few ounces of a solution of nitrate of silver (10 grains to the pint) were introduced and withdrawn. Boric acid was also given by the mouth. Wet-cupping over the lumbar region was employed, but did not appear to be of any benefit. During the last ten days of his illness the patient was slightly delirious, especially at night. This was combated with sulphonal or potassium bromide; but the remedy which had the most marked effect was an ice-bag resting on the abdomen which was kept continually applied from the evening of the 3rd to the evening of the 7th and again on the 9th and 10th. Under its influence the temperature gradually fell from 102·4° to 99°; a general improvement apparently took place in the patient's condition; he became brighter in aspect and was no longer delirious, at least during the daytime. On the removal of the ice-bag the temperature again rose to its former height.

At the post-mortem examination the body was found to be well nourished. The heart was normal, its weight being 9½ ounces. Both lungs showed many old tuberculous lesions which had undergone calcification. At the apex of the right lung were a few more recent tubercles. On the right side also were many old pleuritic adhesions. The right lung weighed 15½ ounces and the left lung weighed 10 ounces. The peritoneal cavity contained no fluid. On the lesser curvature of the stomach at the pyloric end the mucous membrane was ecchymosed; this extended into the duodenum which was adherent to the pancreas. No ulceration was found and the valves were normal. The liver weighed 71 ounces. The capsule was slightly adherent but was otherwise normal. The left kidney was uniformly enlarged, its weight being 7½ ounces. The capsule was not adherent. On the anterior surface near the internal border were many yellow tubercles, varying in size from that of a pin's point to that of a millet seed; some of these were breaking down into pus. The right kidney weighed 6½ ounces and presented on its anterior surface near the hilum several similar tubercles; on section six small tubercles, some of them purulent, were seen around the upper part of the pelvis. The bladder was contracted and its wall was thickened. The whole of the mucous membrane was ecchymosed, eroded, and pitted, and showed many small ulcers. On the anterior wall were several yellow sloughs raised above the surface and with well-defined edges. The lymphatic glands in the abdominal cavity were enlarged. On commencing to open the spinal canal from the front by the Vienna method—i.e., by removing the bodies of the vertebræ—a large abscess was opened in the left psoas muscle which extended from the lower border of the second lumbar vertebra to two inches below the brim of the true pelvis but had not reached Poupart's ligament. It had burrowed into the iliacus and occupied the whole mass of that muscle. Pus was found in the spinal canal pressing on the membranes covering the cauda equina. No sign of caries of the vertebræ could be detected and the first four lumbar vertebræ were removed and carefully dissected without discovering any

evidence of disease. The cauda equina appeared to be healthy and there was no pus within the membranes. There did not seem to be any disease of the hip-joint or the ilium, nor did the sacro-iliac synchondrosis appear to be affected.

There are several points of interest in this case and amongst them two questions arise—viz., (1) What was the origin of the psoas abscess which during life gave no signs of its presence? and (2) What was the origin of the pus in the spinal canal? Here is a patient sent into hospital suffering from typical symptoms of acute myelitis in the region of the conus medullaris and cauda equina. He has no history and shows no signs of tubercle and, indeed, the fact that the symptoms were limited to the spinal cord and were unaccompanied by cerebral manifestations was against the idea that the disease was due to a deposit of tubercle in the cord or its membranes, which moreover appeared to be healthy at the necropsy. Neither could any caries of the vertebral column be detected to originate so large a psoas abscess, which must have existed for some considerable time and yet in life gave no sign of its presence. We venture to put forward the following theory to account for the above phenomena—viz., that the abscess in the ilio-psoas muscle was due to the caseation and subsequent softening of innumerable miliary tubercles deposited in its substance, similar to what had taken place in the various organs of the body, and that this tuberculous pus, instead of finding its way towards the surface beneath Poupart's ligament or other of the usual positions of pointing, had followed the course of the lumbar nerves and had penetrated into the spinal canal through the intervertebral foramina, there setting up symptoms of pressure myelitis. We can find no record of such a theory having been broached before, but anatomically it appears to us to be a possible one.

As regards treatment, the value of the abdominal ice-bag in many acute diseases is, in our opinion, too little appreciated. Its value is best seen in the treatment of acute pneumonias, as first pointed out by Dr. James Barr[1] in his clinical lectures on that disease. It can be kept applied to the abdominal surface for days together and the patient suffers no discomfort from it as long as the groins are protected by a layer of cotton-wool. On the contrary the temperature falls, delirium ceases, the mind clears, the patients sleeps well, and his whole condition markedly improves. By its use we have seen undoubted cases of acute pneumonia aborted at the very commencement of the attack. We have found it of value in many cases, such as the long-continued fevers met with in China, where it is often the only remedy which has permanently reduced the temperature, when all drugs, including hypodermic injections of quinine, have failed. At times one has to be guarded in its use, as in appendicitis, when it may mask important symptoms, but even in these cases we believe it to be of benefit in localising inflammation and suppuration. Its action appears to be a reflex one on the thermogenic centres through the solar plexus and splanchnic nerves. The great advantage of the abdominal ice-bag is its ease of application; it can be kept in position by lightly securing it to a bed-cradle. When one considers the difficulty of keeping ice continually applied to the spine, or even to the chest wall, it is obvious that a method of securing the same advantages and more, without the inherent disadvantages, must be a valuable aid to treatment, as we have found it to be by the experience of many months past.

Wei-Hai-Wei, China.

[1] Brit. Med. Jour., June 16th, 1900.

BRISTOL EYE HOSPITAL.—The annual meeting of the subscribers to this institution was held on March 20th under the presidency of the Lord Mayor. The report stated that 465 in-patients were admitted during 1902. 5954 out-patients were treated, being an increase of 451 compared with the previous year. The financial statement showed that the ordinary income of the hospital was £1345 and that an adverse balance of £381 remained.

DEVON QUEEN VICTORIA COMMEMORATION FUND.—At the meeting of the committee of this fund held at Exeter on March 20th, under the presidency of Lord Clifford, the following grants were made:—Royal Albert Hospital, Devonport, £45; Royal Devon and Exeter Hospital, £40; North Devon Infirmary, Barnstaple, £32; and the Torbay Hospital, 15 guineas. Smaller amounts were also given to 11 other medical institutions in Devonshire.

RECENT EXPERIENCES OF THE UNITED STATES ARMY WITH REGARD TO SANITATION OF YELLOW FEVER IN THE TROPICS.[1]

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THIS being the section devoted to tropical diseases I have thought that some account of the original investigations made concerning one of these diseases and of the sanitary work carried out as the result of these investigations in the tropical island of Cuba by the United States Army might be of interest to the section.

While our sanitary work in Cuba was on general lines the particular interest in this work and our efforts were centred upon yellow fever and for very obvious reasons. Yellow fever is the only one of the severe epidemic diseases to which the western continent has been subject to any extent. While cholera has spread in most parts of this hemisphere its ravages have not been at all comparable to those of yellow fever, and the plague has never affected the Western hemisphere to any extent. Yellow fever, on the other hand, has ravaged both continents many times, on the eastern shore from Quebec on the north to Montevideo on the south, and for long distances on the western shore; and within these limits the destruction of life caused by its prevalence has been second only to the great losses caused by cholera and the plague in the large European centres; sometimes, in as large a city as Philadelphia, killing one-third of the population present at the time of its prevalence. It has been particularly fatal where large numbers of non-immunes have been brought together within the tropics, and this has made it the dread of military commanders in these regions. In this respect it has been more certainly fatal than cholera or the plague in the East. Military expeditions in the tropics in the past have been almost certain to suffer from this disease and there have been several instances of large bodies of men being almost entirely swept off and the objects of the expedition frustrated by this disease alone, as in the French expedition in 1802 to Hayti, in which out of 25,000 men nearly 22,000 died from yellow fever in one season, leaving the remainder entirely at the mercy of the enemy who scarcely had to fire a shot.

To the United States for the last generation yellow fever has been particularly important, not only on account of the loss it has caused to the population, but on account of the great financial loss caused by the quarantines which were established all over the country when this disease appeared in epidemic form, and of late years, along our southern coast, these quarantines are established every summer to prevent the introduction of the disease from the neighbouring coast of the Gulf of Mexico. It is estimated, for instance, that the financial loss caused to the Mississippi valley by the last great epidemic of 1878 amounted to not less than $100,000,000. The origin of the disease, as that of all others, is shrouded in obscurity. We have pretty good evidence that it existed among the Indians on the Mexican coast before the landing of Cortez, and since that time it has been continually present in the West Indies, on the coast bordering the Gulf of Mexico, and in the Caribbean Sea. Occasionally it spreads from this, its constant home, and about the beginning of the nineteenth century it looked as if it might become one of the great epidemic diseases of the world. It made its ravages at that time in Spain, France, and Italy and all along the eastern inhabited coast of North and South America. It has never been known in the densely populated countries of China and India or any part of Asia or Australia.

I will not go into the symptomatology more than to say that yellow fever is a febrile disease of about a week's duration with well-marked and characteristic symptoms in the pronounced cases and, as in other febrile diseases, shading off into every variety of mildness in character. A great deal of study had been given to yellow fever and the peculiarities as to its mode of spread, its history and symptomatology were very well known. At the time of the outbreak of the Spanish-American war the following facts

[1] A paper read at the First Egyptian Medical Congress, Cairo, on Dec. 18th, 1902.

with regard to the disease had been pretty well settled and generally received: That it was endemic about the Gulf of Mexico, as stated above; that outside its endemic focus it was not found unless transported there in some way; that a temperature below the freezing point almost always caused its disappearance; and that it could not be communicated directly from person to person. It was universally received that it was transmitted by fomites, and it was well known that a sick person, or fomites, introduced into a non-infected house would not at once infect it, but that a considerable length of time had to intervene between the introduction and the infection. That, for instance, a man sick from yellow fever, if introduced into an uninfected house, could be nursed with entire safety by a non-immune, but that in the course of time this house would become dangerous from the fact of the yellow fever patient having been there, and that after this time a non-immune was liable to contract yellow fever from merely entering the house. It was known that heat and moisture were very favourable for its development, that it did not occur above certain altitudes, that non-immunes could escape the disease entirely by leaving an infected town, and that they did not, as a general thing, carry the disease with them. At the outbreak of the Spanish-American war Havana was generally believed to be the principal endemic focus in the western hemisphere. The disease was known never to have been absent from this city for the past 150 years and it was the point from which all the surrounding countries were being constantly re-infected. The States of the Union lying along the Gulf of Mexico were in particular danger from this source and the yellow fever of Havana was looked upon as costing these States the loss of many millions of dollars yearly. From the experience of Spain and other European nations in sending large bodies of troops to the West Indies and from the experience of the English in India and their East Indian possessions, the United States military authorities looked with anxiety upon our expeditions into Cuba and feared a very large mortality from disease and particularly from yellow fever. We had long been accustomed to protect our small garrisons from yellow fever when epidemic in the Southern States, by moving the garrison a few miles from the infected locality. This was almost invariably successful and in a few cases in which the first move was not successful a second would be, if care were taken to remove those who sickened in the first few days. But an army undergoing active military operations is not always able to do this, and we knew that, on account of the large body of Spanish soldiers present, nearly every part of the island was infected by yellow fever.

On taking possession of Havana our principal sanitary object was to get rid of yellow fever. We believed that the cities on the eastern coast of the United States, such as Boston, New York, and Philadelphia, had ceased to be subject to yellow fever on account of their improved sanitary condition. We therefore hoped that we would get rid of yellow fever, or at least greatly decrease it, by placing Havana in first-rate sanitary condition; hence we promptly set about this work. Liberal appropriations of money were made for the purpose and every measure that the sanitary science of that day could suggest was adopted. Of course, I refer to more or less temporary measures. We knew that we would not have time for an expensive system of sewering or any such permanent improvements. So far as the general mortality of the city population was concerned, the results obtained by these methods were very gratifying. The death-rate, which in 1898—the last year of the war and of Spanish occupation—was 91·03, fell in 1899 to 33·67, in 1900 to 24·40, and in 1901 to 22·11, a rate which compares favourably with the rates of the more civilised cities of Europe and America; but, to our chagrin and disappointment, we apparently had no effect upon yellow fever.

We had gone to Cuba with the idea that yellow fever was a filth disease; that its germ developed in decomposing organic matter. We had hoped that if we thoroughly cleaned Havana we would deprive the city of the culture medium in which the yellow fever developed and thus rid it of the disease itself; but we found that, while we had little or no yellow fever in the early part of 1899, it began to increase very rapidly after August of that year, when a large non-immune Spanish immigration began to pour in, and December of 1899 was one of the worst Decembers for this disease ever recorded in Havana. During 1900 the sanitary conditions of the city, as evidenced by the general death-rate, continued to improve. Yellow fever, on the contrary, grew worse and worse, and the best and most cleanly parts of the city were most affected. The sanitary department had now had two years of most careful cleaning, disinfection and isolation of yellow fever, without having any perceptible effect and I became convinced that the disease could not be eradicated on these lines alone.

Early in 1900 a board of army medical officers, of which Major Walter Reed was president, was sent to Havana for the purpose of studying yellow fever. After working on various lines they determined to study the mosquito with reference to the disease. They were led to this determination by several reasons, as stated in their "Preliminary Note," more particularly by the well-known epidemiological course of the disease, by the work of Ross on the transmission of malarial fever by the mosquito, and by the report of H. C. Carter, Marine Hospital Service, U.S.A., on the interval between the infecting and secondary cases of yellow fever. They established an experimental station in the country, about six miles from Havana and half a mile or more from any habitation, placed non-immunes in this camp under military control so they could not leave it, kept them there a sufficient length of time to be certain that they had not contracted yellow fever, and then experimented upon them with the species of mosquito which Dr. Carlos Finlay, an eminent physician of Havana, maintained propagated yellow fever. Dr. Finlay had been writing and maintaining ever since 1881 that a certain species of mosquito in Havana was the means of transmitting the disease from person to person. Dr. Finlay had made many experiments with the mosquito, but the results obtained by him were such that they were not anywhere accepted as proving his contention. The army board after considerable experimentation found that it could take a stegomyia, let it bite a yellow fever patient within the first three days of the disease, keep the mosquito from 12 to 20 days, let it bite a non-immune and almost invariably transmit the disease. Some 18 cases were transmitted in this way. The fact that the disease so transmitted was yellow fever was established, not only by well-marked symptoms, but by having the cases seen by well-known physicians of Havana and also having them diagnosed by the official board of Havana, which diagnosed all cases occurring in that city. The following year the Sanitary Department, in an endeavour to immunise, had patients bitten by infected mosquitoes and in this way had a death from yellow fever. A necropsy was made which confirmed the diagnosis in every respect. But the symptoms of yellow fever are so pronounced in a case at all severe that there is ordinarily but little doubt about it.

As above described, the board had taken the precaution to isolate the men experimented upon, so that they could contract the disease in no other way. At the same time that these experiments were going on the board had a mosquito-proof house built in which were placed fomites of all kinds, clothing, bedding, and all things soiled by yellow fever patients. In this building non-immunes slept for two weeks, were then taken out, kept for two weeks longer in the camp, bitten by the mosquito, and promptly developed yellow fever. The period of incubation was found to be from three to six days, the shortest time being two days and 22 hours and the longest six days and two hours. The board also found that the disease could be transmitted by injection of the blood of patients suffering from yellow fever taken within the first three days of the disease. The incubation period in one of these blood cases was slightly under 48 hours. The board also found that the blood, after being passed through a filter which would stop all known micro-organisms, still retained the quality of transmitting the disease, tending to prove that the micro-organism which causes the disease is still sub-microscopic.

These investigations of the board of army medical officers convinced the sanitary department that the stegomyia mosquito was the only means of propagating yellow fever, and that fomites played no part whatever in its transmission. Granting these conclusions as facts it was evident that if we could get rid of the infected stegomyiæ and prevent any more stegomyiæ from becoming infected we should get rid of yellow fever. With these objects in view a scheme was worked out: first, to prevent mosquitoes biting people who had contracted yellow fever. For this purpose arrangements were made so that the quarters of a patient were screened with wire netting within two hours after the case was reported and a guard was placed over the quarters to see that the one wire door allowed was kept properly closed.

DEATHS FROM YELLOW FEVER ACCORDING TO YELLOW FEVER YEAR.

Years.	1890-91.	1891-92.	1892-93.	1893-94.	1894-95.	1895-96.	1896-97.	1897-98.	1898-99.	1899-1900.	1900-01.	Average.	1901-02.	1902.
Months.														
April	13	5	8	8	4	6	14	71	1	2	0	12·00	0	0
May	23	7	7	23	16	10	27	88	4	0	2	18·81	0	0
June	38	41	13	69	31	16	46	174	3	1	8	40·00	0	0
July	67	66	27	118	77	88	116	168	16	2	30	70·45	1	0
August	60	66	67	100	73	120	262	102	16	13	49	84·36	2	0
September	33	65	70	68	76	135	166	56	34	18	52	70·27	2	0
October	32	48	54	46	40	102	240	42	26	25	74	66·27	0	0
November	15	24	52	28	23	35	244	26	13	13	54	48·36	0	0
December	9	17	33	11	29	20	147	8	13	22	20	29·90	0	0
January	10	15	15	7	15	10	69	7	1	8	7	14·90	0	—
February	3	10	6	4	4	7	24	1	0	9	5	6·63	0	—
March	4	1	4	2	2	3	30	2	1	4	1	4·90	0	—
Totals	307	365	396	484	390	552	1385	745	128	122	302	466·90	5	0

Immunes were freely allowed to pass and no notice was taken of fomites of any kind. Secondly, to kill all mosquitoes that might have become infected before the screening of the patient. For this purpose arrangements were made to kill all mosquitoes, both in the house occupied by the patient and in all the contiguous houses. Each room was carefully close and sealed, just as if formalin was going to be used, and pyrethrum was burned in the room at the rate of a pound to a thousand cubic feet of space. Pyrethrum powder, while not the best insecticide, was found to do less injury than other substances, but care was taken to sweep mosquitoes up after its use and to destroy them, as a considerable portion of them would revive when exposed to the fresh air. Thirdly, arrangements were made to keep out people suffering from yellow fever, either in its active or incubative stage. On the sea side this was managed by a five-day quarantine maintained by the Marine Hospital Service. On the land side we had a system of inspection by which all non-immunes were reported, registered, and seen daily by a physician for six days. During the latter six months of 1900 Havana admitted from the infected towns around, on the land side, some 1200 non-immunes. From these 1200 non-immunes we picked up some 20 odd cases of yellow fever. Business and travel did not appear to be interfered with in the least and no attention whatever was given to traffic or to the introduction of fomites of any kind. The system was entirely satisfactory and, I believe, could be adopted to advantage in all similar cases. Fourthly, brigades were organised for the destruction of mosquito larvæ in all parts of the city and suburbs. This was the part of the work on which we put the most labour and that cost us most. We modified our original system considerably as we learned the habits of the different species of mosquitoes and found the ways whereby our labour could be most advantageously expended. We were very successful in decreasing the numbers of mosquitoes. By the end of 1901 they were much less numerous in all parts of the city and in many parts had entirely disappeared. In January, 1901, just before the mosquito brigades were organised, an inspection was made of the whole city and it was found that mosquito larvæ existed in 26,000 different deposits in the city. The inspection made in January, 1902, when the mosquito brigades had been at work about ten months, showed less than 300 deposits of larvæ in the same area. The effect of the destruction of mosquitoes can be well measured by the death-rate from malaria. In 1900 this was 344, in 1901 it was 151, and up to July, 1902, it was 47.

The results as to yellow fever were complete. From the institution of these measures yellow fever began to decline rapidly. Each focus was entirely destroyed as it appeared and gave no more trouble. The work was commenced in February, 1901, and on Sept. 28th of the same year the last case of yellow fever occurred in Havana. Since that time—now more than a year—not a single case has originated in the city. As evidence that this is not accidental a table is inserted of the deaths from yellow fever for the last 12 years.

A glance at this table will show that yellow fever has probably never been absent from Havana for a single day in all these years; that the smallest number of deaths occurring from this disease was 122 in the year 1899, the largest number 1385 in the year 1896, average 466, and as far as we can find from the records the same condition of affairs has existed since 1762. The same favourable condition of affairs was evidenced as to the army. The first year of our occupation, in 1898, with an average strength of 8345 we had a death-rate from disease of 67·94 per 1000; in 1899, with an average strength of 11,969, we had a death-rate from disease of 17·29; in the year 1900, with an average strength of 8690, we had a death-rate from disease of 8·40; in 1901, with an average strength of 5297, we had a death-rate from disease of 3·21; and in the fiscal year ending June 30th, 1902, with an average strength of 4187, we had a death-rate from disease of 1·43. The death-rate for 1902 was smaller than our death-rate from disease either in the United States or in any of the possessions of the United States. A consideration of these facts will, I think, convince an unprejudiced reader that our great success in the preservation of the health both of our troops and the native population, in the entire extirpation of yellow fever and the almost entire extirpation of malarial fever, was due to the destruction of, and the precautions taken against, the mosquito, and that these measures would never have been instituted except for the discoveries made by the army medical board.

Washington, U.S.A.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF HYDRAMNIOS ASSOCIATED WITH TRANSIENT GLYCOSURIA.

BY JAMES BURNET, M.A., M.B., M.R.C.P. EDIN.,
FORMERLY RESIDENT PHYSICIAN, ROYAL INFIRMARY, EDINBURGH.

RECENTLY I was called to see a woman who was in labour. On arriving at the house I found a midwife in attendance. The patient was a III.-para, her age being 39 years. Her last child was born six years ago. Her previous labours had been normal and comparatively easy. She had been in labour for nearly three days. On examination I found the abdomen very much distended beyond the normal limits of pregnancy. Per vaginam the os uteri was found to be fairly well dilated and through it could be felt the bulging sac of membranes. The uterine contractions were very feeble and irregular. On palpating the abdomen very carefully distinct fluctuation could be made out. The complication of pregnancy by ovarian cyst was thought of, but the subsequent course of events proved what was the true nature of the case. As the os was fairly well dilated I resolved to rupture the membranes. On doing so a large bowlful of liquor amnii escaped. The fœtal head could now be made out, lying in the left occipito-anterior position. I then waited for half an hour, but the pains were

so exceedingly feeble that I resolved to anæsthetise the patient and to apply forceps. No sooner was the first blade introduced within the uterus than a gush of fluid took place. There was in all, roughly speaking, about two gallons. Traction proved by no means an easy matter but eventually delivery was completed. The child was a male. There was no deformity present and the child was well nourished. The placenta was carefully examined but no abnormality could be discovered, nor was its size larger than usual.

The interesting feature in this case is the fact that on examination of some of the urine which the patient had passed during labour sugar was found to be present. I may note here that the urine was submitted to a very careful examination. A specimen examined during the puerperium was found to be absolutely normal. Occasionally diabetes has been noted in connexion with hydramnios, but it will be remarked that in this case there was a simple glycosuria of a transient nature. During pregnancy, so far as I could gather, the patient experienced no trouble beyond the discomfort due to the large size of her abdomen which rendered progression somewhat difficult. Again, it has been stated that where hydramnios occurs the child is invariably a female and is often born dead or, if alive, presents some deformity. In this case the child was a male and apparently healthy in every respect. There was no post-partum hæmorrhage, as is so frequently seen in such cases.

The cause of hydramnios is still a much-disputed subject, Tarnier maintaining that it is due to deficient absorption of the amniotic secretion. This, however, will not explain the association of glycosuria with the condition as exemplified in my case. That the glycosuria was of a transient nature is conclusively proved by the fact that the patient stated definitely that she experienced none of the attendant symptoms of this condition during pregnancy and also that sugar entirely disappeared from the urine a few days after labour. Was the glycosuria in this case a pure neurosis occurring during labour, or was it coincident with pregnancy, being present without attracting the patient's attention by reason of any coexisting discomfort? I am afraid that it is impossible to state which view of the case is the correct one. Nevertheless, the case has a certain clinical and pathological interest which warrants this brief record of it.

Edinburgh.

A CASE OF PURPURA RHEUMATICA.

BY ROBERT S. WELLS, L.R.C.P., L.R.C.S. EDIN., L.F.P.S. GLASG.

THE patient, a man, aged 19 years, first came under my observation on Nov. 7th, 1902. He at this time complained of pain in his right knee and ankle joints which were swollen and tender. His temperature was 102° F. and his pulse-rate was 96. His tongue was furred and his bowels were constipated. Nothing abnormal could be made out either in his lungs or heart. He was given five grains of calomel at once and 15 grains of sodium salicylate every four hours. Next day the pain in his joints had abated to some extent, but around each affected joint there was a very copious hæmorrhagic rash, the spots varying in size from that of a split-pea to that of a threepenny-piece. The urine was dark-coloured but no blood was present. On the 12th he began to vomit, the vomited material being of a dark colour at first, but later in the day blood became visible in it. The urine which he passed contained a fair amount of blood and he had also severe bleeding from the nose. He was put on a strictly milk diet and as his stomach was so irritable the sodium salicylate mixture was discontinued and he was given a mixture containing hydrocyanic acid and bismuth. On the next day the vomiting was much less severe, but his stools contained a large amount of blood and he complained of pain in his elbow-joints which were swollen and around which there was a copious hæmorrhagic rash. There was also a blowing murmur in the mitral area; the pulse was rapid (120 per minute) and very irregular. A hypodermic injection containing $\frac{1}{60}$th of a grain of strychnia and $\frac{1}{100}$th of a grain of ergotin was administered and in the evening the pulse was more regular though still rapid, but the bleeding had ceased. He continued to improve up to the 18th. On that date he had pain in his wrists and left ankle-joint. His bowels, which had been regular, now became loose, and his urine was almost wholly pure blood. His pulse became very irregular and weak, so $\frac{1}{60}$th of a grain of strychnia was given hypodermically and one drachm of brandy in milk was administered every hour. He passed a comfortable night, the diarrhœa ceased, and the pulse was more regular though still rapid (100 per minute). The urine still contained a large amount of blood and as there was some epistaxis $\frac{1}{200}$th of a grain of ergotin was given and this was repeated in the evening. He continued to improve up to the 28th when he complained of severe abdominal pain on account of which his nurse applied a linseed poultice, which, however, did not relieve him. The patient now became delirious and had to be held in bed, so a hypodermic injection containing a quarter of a grain of morphia and $\frac{1}{100}$th of a grain of hyoscine was given and in a short time he became quiet and fell asleep. In the evening he was quite free from pain, but as his pulse was weak $\frac{1}{60}$th of a grain of strychnia was administered and two drachms of whisky in milk every hour were given. On the next day he continued to be free from pain, his pulse being stronger and more regular. On Dec. 1st the joints were entirely free from pain and no fresh hæmorrhages had appeared; the urine, however, contained a small trace of blood. He was now put on a mixture containing ten minims of tincture of perchloride of iron, six minims of tincture of digitalis, and four minims of liquor strychniæ thrice daily. He continued to improve so rapidly that he was allowed to leave his bed on Dec. 6th, his urine on that date being entirely free from blood but containing a mere trace of albumin. On the 9th the urine was free from albumin, the hæmorrhagic spots had all disappeared, and the joints were quite free from pain and tenderness on pressure and movement.

The interesting points in this case were: (1) the large hæmorrhages from the stomach, the bowels, and the kidneys, and the good effect of ergotin in controlling those hæmorrhages; (2) the rapid recovery of the patient when once he had "turned the corner"; and (3) the occurrence of abdominal pain.

A case presenting similar symptoms but of less severity was under my care in the months of July and August, 1902. At the onset of the illness there was loss of power of speech and motion; abdominal pain was also a feature. The treatment consisted in the administration of ten grains of sodium salicylate and ten minims of liquid extract of ergot every six hours, five minims of liquor arsenicalis being added to the dose at a later stage.

Kirkcowan.

NOTE ON A CASE OF FRACTURE OF THE SKULL WITH RUPTURE OF THE POSTERIOR BRANCH OF THE LEFT MIDDLE MENINGEAL ARTERY.

BY FRANK M. MORRIS, M.B., B.S. LOND.

AT 6 P.M. on Nov. 26th, 1902, I saw in consultation with Dr. Munnik a male patient with the following history. About 5 P.M. he had fallen from a horse, his head striking the stump of a tree. He got up and walked to his house, complaining of pain in his neck and back, but otherwise he felt himself fairly well, smoking and joking with his friends. He was seen by Dr. Munnik at 5.15 P.M. when he was quite conscious and complained of nothing. At 5.30 P.M. he stood up and said that something broke in his head, he began to cry, and laid himself on the bed and quickly became stupid. When seen by me half an hour later the patient, a stoutly built man, aged 23 years, was restless and irritable; he answered questions coherently but shortly; his colour was livid and his face was covered with perspiration; his pupils were equal and were slightly contracted and his left pupil reacted sluggishly to light. There was no paralysis or paresis. At 7 P.M. he could not be roused; his left pupil was dilated and fixed, his right arm was paralysed, and there was paresis of his right leg; his pulse was slow.

A diagnosis of left meningeal hæmorrhage was made and an operation was decided on, but we were confronted with the difficulty that we had no trephine in the village and the patient was rapidly becoming worse. We therefore borrowed a large brace-bit and a gouge from the village carpenter. On shaving the head a small bruise was seen behind and above the left ear. This was made the centre of a semi-circular incision, which included all structures down to the bone, when a linear fracture was exposed from which a little blood oozed. The brace-bit was applied over this fracture

and was cautiously worked by Dr. Munnik; on getting through the bone we came on a blood clot. With a straight bone forceps the bone was chipped away in a forward and downward direction for about an inch and on cleaning away the clot blood spouted up. A needle threaded with fine catgut was passed above and below the bleeding point which was tied; all of the clot which could be reached was removed and the wound was sewn up with silkworm gut, a small drainage tube being left in. No chloroform was needed at first, but on the clot being removed the patient became violent, with free movement of both arms.

On the 27th he was conscious but stupid; slight paresis of the right arm remained and his pulse was still slow; there was much oozing from the wound. On the 28th, when the tube was removed, the wound was found to be healthy and the mental condition of the patient was becoming better. The improvement continued uninterruptedly and such progress was made that the patient left his bed in two weeks and was able to bathe and to ride or to bicycle within a month.

Ceres, Cape Colony.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

SUSSEX COUNTY HOSPITAL.

A CASE OF PARAPLEGIA WHEREIN MULTIPLE TUMOURS OF A THYROID NATURE WERE FOUND IN THE CEREBRO-SPINAL MENINGES AND ELSEWHERE AFTER DEATH.

(Under the care of Dr. W. AINSLIE HOLLIS.)

A MAN, aged 45 years, was admitted to the Sussex County Hospital on Dec. 12th, 1901. Both parents were dead. There was a history of tuberculosis on the mother's side. At the age of 16 years the patient had had an attack of gonorrhœa, but there was no history of syphilis. He had been married for some years. He drank usually two or three pints of beer daily. Since the preceding March he had suffered from attacks of lumbago of varying intensity, some four or five of which were very severe: at the same time he suffered occasionally with severe headache, giddiness, and vomiting. About a week before admission into the hospital he found a loss of power in the left leg, then in the right. This symptom was rapidly followed by almost total motor and sensory paralysis of the lower limbs and a girdle pain around the waist.

On admission the patient's aspect was healthy. There was no paresis of the facial muscles, the eyesight and hearing were apparently normal, and the grip was good. There was complete loss of sensation below the tenth dorsal vertebra and the lower costal margin in front, with loss of control over the sphincter ani. The patient had a large bedsore over the sacrum and a small one on the left ankle. The knee-jerks were absent. The right plantar reflex was sluggish with feeble extensor response; the left was brisk with marked extensor response. The cardiac and respiratory sounds were natural. The urine was very offensive, alkaline, and phosphatic, containing also pus, spermatozoa, blood, and mucus; its specific gravity was 1030 and there was some retention. The temperature rose to 100° F. during the first two days in the hospital; subsequently, as a rule, it remained either normal or subnormal.

The patient continued much in the same condition until the middle of January. His bladder was washed out occasionally and a headache from which he at times suffered was relieved by phenacetin. The spine was repeatedly examined but no tenderness was elicited by pressure. The girdle pain remained in the same situation. He now complained of pain through the shoulders and a sense of impending suffocation and he could not take a deep breath. At the end of the month œdema of the left leg began, but no blocked vessel was felt. On March 10th he complained of a stiff neck and a large deep seated tumour was felt behind the left clavicle and the sterno-mastoid. This swelling increased in size for several days until it was a couple of inches above the level of the collar-bone and it could be felt as a soft nodular mass beneath the anterior border of the muscle. The tumour afterwards diminished in size until one or two small gland-like tumours were alone to be felt. After this attack the man went downhill rapidly. His head became markedly retracted on April 3rd and the right arm somewhat rigid. He wandered at night. There was a troublesome cough with much glairy mucus which, owing to general weakness, the

Section of a tumour of the falx cerebri showing structural resemblance to the thyroid gland. *a a*, Sacculeslined with a single layer of columnar epithelium and containing a colloid substance with a few scattered nuclei imbedded in it. *b b*, Interlobular stroma of fibrous tissue.

patient expectorated with daily increasing difficulty. He was fairly conscious to the last, although his articulatory powers were extremely feeble, and he died, apparently asphyxiated, on April 11th.

Necropsy.—At the post-mortem examination, which was held on April 12th, a tumour of the size of a walnut was found beneath the cerebral membranes posteriorly and to the left of the falx cerebri. The grey matter of the external occipito parietal fissure beneath the tumour was indented. On the left side of the cerebellum was a similar tumour. On the anterior aspect of the body of the third dorsal vertebra there were a tumour and some extensive narrowing of the spinal canal. The spinal cord was quite degenerated below the third dorsal vertebra. The thyroid gland was not enlarged. Nothing very abnormal was found in the chest. There were two tumours found in the liver each of them of the size of a walnut. Both adrenals were much enlarged and showed some structural changes. Portions of the tumours were forwarded to the Clinical Research Association. In due course the following report was received: "The growth in the suprarenal body has a remarkable structure. It is evidently a secondary deposit and resembles the specimens from the cerebellum and falx cerebri. There is, however, more solid growth arranged in alveoli, which seems to indicate a more rapid epithelial proliferation. The tumour in the cerebellum and that attached to the falx cerebri have the same peculiar structure: numerous spaces and cysts lined with columnar epithelium and filled with a colloid secretion or with vascular intercystic papillomata. They most nearly resembled certain tumours found in the thyroid gland." The reporter, Mr. J. H. Targett, subsequently added: "It would be interesting to know whether any enlargement of the thyroid gland existed which might have been the primary focus of the disease." There was, however, no enlargement, and notes of the case including this statement were forwarded to Mr. Targett. That gentleman then sent a further report on the case to the house physician, Dr. Henderson. After stating that the disorganisation of the spinal cord was due to mechanical compression he continued: "As to the exact nature of the tumours I am still somewhat in doubt. Many parts of the section bear a very close resemblance to thyroid gland and at the same time the growth is obviously malignant. I note

in your report of the case that the thyroid was normal. A lump, however, formed in the anterior triangle of the neck which might have been connected with an accessory thyroid gland or the so-called parathyroid bodies."

Remarks by Dr. HOLLIS.—This case of malignant disease, apart from its rarity, is interesting both in its clinical history and from its histological significance. We learn, firstly, that a patient may suffer from a metastatic development of rapidly growing tumours of a thyroid nature without a goitrous enlargement; and, secondly, the structural peculiarities of the tumours suggest that during life they performed functions resembling those of the thyroid body. It is incredible that the metastasis of these highly differentiated tumours was achieved through the agency of psorosperms or other alien germs circulating through the system. The case, then, is interesting in its relation to the "parasitic theory," if I may so name it, of the causation of malignant disease. There is little doubt that the tumour in the falx cerebri was one of the earliest, if not the first, to develop. Its histological features pointed to this conclusion. On section this tumour presented a close resemblance in structure to a supplementary thyroid body. It consisted of similar saccules lined with a single secretory layer of cubical epithelium and filled with a colloid material which stained readily. The saccules were bound together by strands of areolar tissue supporting the blood-vessels. Such a highly differentiated body probably grew slowly. We had clinical evidence in the early onset of giddiness and vomiting that this and the cerebellar tumours were then developing. On the other hand, the suprarenal growths displayed a neoplasm of a far more malignant type. Although saccules, visible in the cerebral tumours, could also be made out here, yet their characters were much changed. They no longer contained a homogeneous colloid but were stuffed in many instances with proliferating cellular elements. These histological peculiarities agreed also with other macroscopic characters separating the adrenal growths from the others. Instead of being sharply defined from the surrounding tissues as was the case in the first-mentioned tumour, the latter growths partook of the characters of a diffuse cellular invasion of the neighbouring tissues. I am indebted to Mr. H. T. Marriott, who saw the case for some time before admission to the hospital, to Dr. Henderson and to Mr. R. H. W. Garle, the third house surgeon and pathologist, for much of the information here recorded.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

Paroxysmal Hæmoglobinuria of Traumatic Origin.—Remarkable Series of Cases of Molluscum Fibrosum in Children.

A MEETING of this society was held on March 24th, Mr. ALFRED WILLETT, the President, being in the chair.

Mr. C. W. ENSOR and Dr. J. O. WAKELIN BARRATT communicated a paper on Paroxysmal Hæmoglobinuria of Traumatic Origin. They said that the purpose of the paper was to describe a case of paroxysmal hæmoglobinuria which was of unusual interest since the attacks of hæmoglobinuria were associated with preceding violence. The subject of the paroxysms was a lunatic who for some years had contracted a habit of beating his forehead with the palm of his right hand. At irregular intervals this habit took the form of a bout of extreme violence, lasting for from half an hour to one hour or longer; such bouts were quickly followed by hæmoglobinuria. Indications of local syncope and local asphyxia were absent, nor did the paroxysms depend upon exposure to cold. The interdependence of the paroxysms and the bouts of violence was shown by the fact that (1) every attack studied had been preceded by a bout of violence; (2) no undoubted instance of a bout of violence not being followed by hæmoglobinuria had been discovered; and (3) restraining the patient from beating his forehead tended to reduce the number of paroxysms. The hæmoglobin was present in the urine in the form of oxyhæmoglobin. A small amount of a compound giving an absorption band in the red of the solar spectrum was also present. The amount of hæmoglobin lost during a paroxysm was equal to that contained in from 1·5 to 2·0 grammes of the patient's blood. The suggested explanation of the attacks of hæmoglobinuria was as follows: the self-inflicted violence caused extravasation of blood into the subcutaneous tissue. Hæmoglobin rapidly passed out of the red cells owing to the local development of an autolysin. The dissolved hæmoglobin entered the blood stream and became rapidly filtered off through the glomerular epithelium of the kidneys.—Dr. LOUIS W. SAMBON said that Mr. Ensor and Dr. Barratt attributed the hæmoglobinuria in this case to the frequent blows which the patient inflicted upon himself by beating his forehead with the palm of the right hand. To explain the pathology of this so-called "traumatic hæmoglobinuria" they were obliged to surmise that the blows caused effusion of blood in the underlying tissues, a fact which they contradicted themselves because they stated "that the skin of the forehead did not exhibit any bruising, even after severe beating." They were obliged, moreover, to suppose that the hypothetically effused blood underwent auto-hæmolysis, a condition of which he knew no other example. But Mr. Ensor and Dr. Barratt did not prove that the hæmoglobinuric paroxysms always followed every repetition of traumatism—in fact, they stated that they could give no definite proof of the hæmoglobinuria not presenting itself without previous violence. He was inclined to look upon the violence of the patient as an accompanying phenomenon. Mr. Ensor and Dr. Barratt suggested that the paroxysms might be due to muscular exertion and they stated that though in man exertion was not known to be ever followed by hæmoglobinuria, it did, however, occur in horses. Horses, like oxen and sheep, did suffer from attacks of paroxysmal hæmoglobinuria, or red-water fever as it was called, but in such cases—at least in oxen and sheep—the disease was due to a protozoal parasite and muscular exertion could only be an exciting cause which brought into activity the latent parasite. In the Roman Campagna newly imported oxen invariably suffered from hæmoglobinuria with fever during the summer but the indigenous cattle never developed the disease except under the stress of great fatigue during the harvesting season. Paroxysmal hæmoglobin was attributed to many causes, such as exposure to cold, syphilis, malaria, and tuberculosis, and he hesitated to add traumatism to this list. The occasional epidemic occurrence of paroxysmal hæmoglobinuria among infants in lying-in institutions, he thought, proved that a more specific cause must be looked for.—Dr. J. W. W. STEPHENS thought that many of the features in the case recorded resembled those occurring in blackwater fever. The urine of a patient previously to the onset of an attack of blackwater fever often contained urobilin, as shown by the spectroscope, and a trace of albumin, and a similar condition had been present in the case recorded. The quantity of hæmoglobin in the plasma of the blood was often of too small a quantity to give rise to any apparent hæmoglobinæmia.—Dr. VAUGHAN HARLEY questioned whether the presence of the hæmoglobinuria could be attributed to a hæmolysin which was supposed to be formed at the seat of injury. He suggested that mechanical vibration might liberate the hæmoglobin from the stroma of the corpuscles. He stated that in certain individuals urobilin was constantly to be found in the urine.—Dr. A. E. GARROD said that there could be but little doubt that exposure to cold was an exciting cause of paroxysmal hæmoglobinuria. The lowering of the superficial temperature of the body was sufficient to produce an attack, but there was probably some underlying factor in most cases which was not clear. In some cases exertion would produce an attack when cold would not. An explanation must be sought for rather in the formation of a hæmolysin than in any actual friability of the corpuscles.—Dr. W. BULLOCH said that laking of corpuscles was produced in two ways: firstly, by substances such as ether, and, secondly, by animal products, of which cobra venom might be given as an instance. The question arose whether the production of the hæmoglobin was due to a simple body of the first group or to the more complicated body of the second group. The mechanical act of beating on the forehead might produce a substance which would act as a hæmolysin and that body might, as Ehlich had suggested, be derived from the endothelial cells of the vessels at the point of injury.—Dr. BARRATT replied.

Dr. ARTHUR H. ROBINSON and Dr. ARTHUR WHITFIELD related a further account of a remarkable series of cases of Molluscum Fibrosum in Children communicated to the

society by Dr. John Murray in 1873. They said that the description of the condition of these patients in later life had been thought of sufficient interest to justify a further report, especially as, owing to the death of one of them in Islington Infirmary, material for investigation was obtained from various positions. The patients were originally three in number, two females and a male, and constituted the second, third, and fourth children of a family of five, the eldest and youngest being healthy. When described by Dr. Murray the abnormality consisted in the presence of numerous tumours, varying in size from that of a pea to that of a walnut and situated on the face, head, ears, back, and extremities. Similar growths were also found on the gums and the terminal phalanges of the fingers were buried in purple tumours. This condition was most marked in the eldest child, a girl, aged seven years, but a similar state of things was to be observed in the boy, aged three years and nine months, with the exception that his fingers were not affected, and also to a very slight degree in the girl, aged two years. Of these three children one, the youngest, had been dead some time and nothing further could be found about her. The eldest lived in a home for incurable patients and was visited and the size and position of the tumours in the present year were carefully noted. The male died in Islington Infirmary and photographs were taken after death, as well as material for histological examination. The chief change in the female patient appeared to be the enormous growth of the tumours in size rather than in number. Instead of reaching the size of a walnut as a maximum they now formed in places, especially the buttocks, great lobed masses larger than an orange, those on the ears alone being as large as a walnut. Charts were shown giving the size and distribution of the tumours and it was noted that one or two new growths appeared to have developed, whilst one at least seemed to have disappeared. The appearance of the head of this patient was so hideous that she was constantly wrapped up in linen. The male patient also showed enormous development of the original tumours in a similar manner and also the formation of a large number of small subcutaneous tumours about the fingers and toes. Histological examination was made of portions taken from the nose, ear, and fingers. The two former pieces presented identical appearances—viz., that of a tumour composed of a hyaline ground-substance containing fine connective tissue fibres and large cells, while the latter showed partly similar growth and partly ordinary fibroma. The tumours from the nose and ear seemed to blend with the corium and might be called cutaneous, while that of the finger was distinctly subcutaneous. No nerve fibres or elastic tissues were found within the tumours which were fibromata and not neuro-fibromata.—Sir THOMAS BARLOW said that the patients had been under the care of Dr. Murray as children and he had attributed the condition to the insanitary surroundings in which they were brought up. The father died from cancer of the stomach and this was of especial interest in connexion with the non-malignant affection of the children. The eldest child was most affected and in the two elder the disease was progressive, while in the third child the disease became arrested. These children were liable to severe febrile disturbances. The mental condition of these patients also varied with their disease, for the first was mentally defective, the second was brighter, and the third was intelligent.

MEDICAL SOCIETY OF LONDON.

Exhibition of Cases.

A MEETING of this society was held on March 23rd, Mr. PEARCE GOULD, the President, being in the chair.

The PRESIDENT exhibited a severe case of Rodent Ulcer treated by the x rays. The patient was a man, aged 73 years, the whole of whose upper jaw and part of the lower jaw had been gradually in the course of 40 years eroded by the disease. He had undergone several operations but the disease had always recurred. He had been treated by the x rays since April last. It relieved the pain, but the disease did not improve until in February the strength of the current was increased to three ampères. Three exposures were made per diem with a spark of from four and a half to five inches. The case had made very marked improvement since February.

Dr. S. E. DORE exhibited a case of Rodent Ulcer in an Unusual Position treated by the X Rays and the Finsen Light. The patient was a woman, aged 44 years, in whom the disease had started 18 years ago as a small pimple on the right cheek which began to ulcerate about five years ago. After 30 applications of the x rays the ulcer had entirely healed and the edge was further treated with six applications of the Finsen light. Treatment had been discontinued for the past five months and the edge now showed signs of recrudescence. The case illustrated the readiness with which an ulcer healed when treated with the x rays, also that the hard edge often resisted this treatment and had to be dealt with by other methods. On the side of the face which had been treated solely by the x rays the scar was hard and telangiectatic; on the other side, treated by the Finsen light, it was soft and pliant. Mucous membrane, however, did much better under the x rays than under the Finsen light. Dr. Dore also exhibited two cases of Lupus Vulgaris similarly treated. The first was a woman, aged 34 years, who had been under treatment for three years; and the second was a woman, aged 24 years, who had had the disease for 14 years. Both cases showed very great improvement, while they both illustrated the tendency to relapse.

Dr. WILLIAM EWART exhibited a case of Multiple Symmetrical Fatty Swellings resembling Dercum's disease (adiposis dolorosa). The patient was a married woman, aged 43 years, who was sent to St. George's Hospital in February, 1903, for symptoms of hepatic cirrhosis. A flat soft swelling, painful and tender, situated over the seventh cervical vertebra was first noticed three months ago. Quite recently similar swellings of the same kind had been observed in the arms, shoulders, and neck, for the most part symmetrically situated. The case was of interest as suggesting the view that multiple painful and tender lipomata, such as those described by Dercum, might occur in association with wasting as well as adiposis.

Dr. T. GRAINGER STEWART exhibited (for Dr. J. A. ORMEROD) a case of Syringomyelia occurring in a man, aged 29 years, who was admitted to the National Hospital for the Paralysed and Epileptic for weakness of the right arm and leg. When an infant he had had a "fleshy lump" of doubtful origin cut away from the back of his neck. His illness had commenced with a cold dead feeling in the right leg which extended to the right arm. On admission there were weakness and wasting of the right forearm and hand and a spastic condition of the lower extremities. The knee- and ankle-jerks were very brisk but the deep reflexes were absent in the upper extremities. The plantar reflexes were both of an extensor type.—Mr. T. HERBERT KELLOCK suggested that the operation on the neck was for spina bifida, which might be an indirect cause of the syringomyelia.

Dr. STEWART also exhibited a case of Functional Paralysis with Tremor, occurring in a female, aged 20 years. The present illness had commenced six years before with the gradual supervention of weakness of the left leg. The tremor in the right arm commenced suddenly three months later. She was admitted for the second time to the National Hospital for the Paralysed and Epileptic in November, 1902, when there was weakness of all the extremities with tremor on exertion. Her gait was of a markedly "functional" type though of a somewhat spastic type. There was no wasting or rigidity of the muscles. The deep reflexes were increased and ankle clonus was present; there were also hyperæsthesia over the spine and ovarian regions. There was marked contraction of the visual fields, especially for colour The patient had improved considerably since admission.

Dr. F. PARKES WEBER exhibited a case of Multiple Congenital Deformities. The child, aged one and a quarter years, presented chronic hydrocephalus, quiescent at the present time, complete syndactylia of both feet and both hands, cleft palate, and slight umbilical hernia. The frontal and parietal bones were widely separated in the sagittal line, and the shape of the supra-orbital regions likewise indicated chronic hydrocephalus, but the absence of any bulging in the sagittal line indicated that the hydrocephalus was quiescent at the present time. The occasional association of chronic hydrocephalus with spina bifida was generally recognised. The present case illustrated its association with other malformations.—Dr. GEORGE SHUTTLEWORTH asked if there was any history of syphilis or any trouble during labour. He doubted if such cases of hydrocephalus ever got quite well and referred to a case which he had had under observation for many years.

Dr. WEBER also exhibited a case of the Form of Chronic Joint Disease in Children described by Dr. G. F. Still in 1896.[1] When the boy was shown before the Medical Society of London in April, 1902, he was a typical example of this clinical condition, having, in addition to the cervical rigidity and characteristic articular swellings, enlargement of the spleen, liver, and lymphatic glands. The condition of his articulations was now almost normal with the exception of crackling in the knees and slight spindle-shaped enlargement about the finger-joints, and the rigidity of the upper part of the spinal column had practically disappeared. The heart, which was affected by an attack of endocarditis in November, 1901, still presented signs of slight mitral disease. This case seemed to show that the articular affection described by Dr. Still was sometimes practically recovered from The most important part of the treatment had consisted in the child having been kept away from the unsatisfactory conditions of his own home since May, 1901, combined with suitable diet. Dr. Weber still thought that the original affection was, or was complicated with, true rheumatism.

Dr. F. J. POYNTON exhibited a case of Chronic Rheumatic Arthritis in a child. The patient, a girl, aged six years, was first seen in October, 1901, and had then been suffering for five months from rheumatic fever which had affected all the larger joints, had caused dilatation of the heart and a periosteal nodule on the lower end of the right radius. The chief points of interest were the length and severity of the arthritis in a young child who had been eight months at least bedridden from arthritis; the failure of salicylates in a case of simple rheumatism; and the completeness of the recovery under liberal diet, including meat and tonics.—The PRESIDENT asked Dr. Poynton if there was any swelling of the spleen and glands as in Dr. Weber's case and in those cases published by Dr. Still.—Dr. A. E. SANSOM emphasised the difference between what he regarded as an occult form of rheumatism which tended to affect the heart and the more obvious form which tended to affect the joints.

Dr. CHARLES W. CHAPMAN showed a case of Multiple Cardiac Murmurs in a boy, aged nine years, who had had scarlet fever four years before and chorea three years later. On examination there were marked prominence of the left side of the chest, visible cardiac action with forcible apex-beat, jerky pulsation of the vessels of the neck, considerable increase of cardiac dulness, especially in the lateral direction, and thrills of systolic rhymth could be felt over the aortic, mitral, and tricuspid areas. There were a loud sawing double murmur in the aortic area with obliteration of the second sound, a blowing mitral systolic murmur, and a harsh systolic murmur in the tricuspid region. The pulse was regular and collapsing. It was probable that the lesions were partly congenital and partly due to endocarditis during scarlet fever and chorea. It was remarkable how little inconvenience the boy had suffered from the state of his heart.—Dr. EWART remarked on the enormous cardiac dilatation which might exist with very little cyanosis.

Dr. H. A. CALEY exhibited a case of Arthropathy of the Right Hip and Left Ankle Joints of Neurotrophic Origin with Osteo-Arthritis of the Right Hand, with skiagrams of the affected joints. The patient was a man, aged 73 years, who, in January, 1903, slipped and fell upon the right hip, for which he was admitted to St. Mary's Hospital. The osteo-arthritis in the wrist, metacarpal and phalangeal joints of the right hand had commenced 30 years before, but the trouble in the right hip and left ankle had commenced quite recently. It was uncommon to find two forms of arthritis in a man of this age. The only distinct nerve symptom which existed in this case was Argyll-Robertson pupil of the right side only—a circumstance which was also unusual. The knee-jerks were exaggerated, but this pointed to the fact that lateral sclerosis might exist with other spinal disease. Skiagrams showed that whereas there was thickening of the bones in the osteo-arthritic joint lesions of the hands, in the hip and knee joints, the affection of which was of neurotrophic origin, there was atrophy.—Dr. F. J. POYNTON remarked on the possibility of rheumatoid arthritis becoming atrophic in the aged and asked whether this might not be so in the present case, all the joint lesions being of one kind.—Dr. CALEY, in reply, pointed out the long duration of the osteo-arthritic changes and the more recent supervention of the neurotrophic changes which were moreover of an atrophic description as shown by the skiagrams.

[1] Transactions of the Royal Medical and Chirurgical Society, vol. xx., p. 47.

OBSTETRICAL SOCIETY OF LONDON.

Exhibition of Specimens.—Presidential Address.

A MEETING of this society was held on March 4th, Dr. EDWARD MALINS, the President, being in the chair.

Dr. C. H. ROBERTS showed microscopical sections of a case of Tuberculosis of the Fallopian Tube and Ovary, removed by operation from a woman, aged 32 years. The patient had been in failing health since 1899. In December, 1902, she was much worse with irregular uterine hæmorrhage, fever, and wasting. A considerable tumour was found in the lower abdomen. On opening the abdomen both tubes and ovaries were found to be enlarged. The left tube was from four to five inches long and adherent to a necrotic ovary of the size of the fist. The pelvis was roofed in by dense adhesions and the intestines were adherent to the tubes and back of the uterus. Both tubes were banana-like in shape and contained pus. Sections of the uterine ends of the tubes showed distinct tuberculous nodules, giant cells, and breaking-down caseous areas. The ovarian tissue also contained tubercle nodules. The patient sank in 36 hours from shock. The question of the advisability of abdominal section in such desperate cases was discussed. Tuberculous pyosalpinx pointing in the vagina could easily be opened and drained by that route, as in another case under the care of Dr. Roberts, though, of course, the tubes could not be removed. In such cases abdominal section might be undertaken when the patient's condition allowed.—Dr. WALTER SWAYNE said that three months ago he had to deal with a case which presented many features similar to those described by Dr. Roberts. The patient had a large mass in the pelvis and much distension of the abdomen which contained fluid. On opening the abdomen the whole of the peritoneum was studded with what to the naked eye was apparently miliary tubercle. The appendages were imbedded in exudation which formed the mass felt in the pelvis and the peritoneum was full of ascitic fluid; it was obvious that removal of the appendages was impossible and the wound was closed after flushing the peritoneal cavity with a hot saturated solution of boric acid. The patient made a good recovery and at the end of a month she had put on several pounds in weight.—Dr. P. HORROCKS, Dr. W. S. A. GRIFFITH, and Mr. J. H. TARGETT also joined in the discussion.

Dr. A. H. N. LEWERS showed a specimen of Keratinising Carcinoma of the Body of the Uterus. The patient from whom the specimen was removed was a single woman, aged 45 years. She had suffered from metrorrhagia for two years and from some pain about the lower abdomen which came on some time after the commencement of the bleeding. The cervix was dilated and a malignant growth was found in the body of the uterus. There was a lump felt to the right of the uterus of the size of a Tangerine orange. Abdominal panhysterectomy was performed on Nov. 27th, 1902, in the London Hospital. The lump to the right of the uterus proved to be the right ovary enlarged, partly by cystic change and partly by a malignant growth secondary to that in the uterus. The ovary was not adherent, and there was no evidence of any other secondary deposit elsewhere. As regards the operation the case illustrated the advantages of the abdominal operation, especially since the exact nature of the lump to the right was ascertained at the very beginning of the operation, instead of towards the end of it, as would have been the case if vaginal hysterectomy had been performed. The patient made a good recovery. As regards the specimen the growth was a columnar-celled carcinoma, but over a considerable extent it had become keratinised, so that in parts of the sections the appearances were very similar to those of squamous carcinoma of the cervix.—MRS. STANLEY BOYD, M.D., in reference to the association in Dr. Lewers's case of carcinoma of the body with carcinoma of the ovary, mentioned a similar case where she had removed by abdominal panhysterectomy a large uterus, the seat both of fibroids and cancer of the body, from a middle-aged woman. The right ovary contained a secondary growth and was non-adherent and easily removed with the uterus. No other secondary growths were discoverable. The patient died some six months later with cerebral symptoms. There was no evidence of local recurrence or of involvement of abdominal glands.—Dr. C. J. CULLINGWORTH said that Dr. Lewers's case and the one to which Mrs. Boyd had referred had a special interest for him at that moment, as he had that very morning operated upon the second case

of the kind that he had met with within the last two years. Both cases had occurred in his private practice and were, so far as he could remember, new in his experience. In both patients there was evidence of new growth in the lateral parts of the pelvis, for which abdominal section was performed, but in each case there was irregular uterine hæmorrhage of such character and extent as to make it seem desirable to dilate and to curette the uterine cavity before opening the abdomen. In the case of the first patient an ovarian cyst with some obviously malignant papilloma was removed, the scrapings from the uterus being meanwhile sent for examination and report. The report being to the effect that the uterine disease was carcinoma, the uterus was removed by vaginal hysterectomy a fortnight after the original operation. There was found to be extensive carcinoma of the body of the uterus. The patient was at that moment, 18 months after the operation, free from any sign of recurrence. In the case of the second patient the preliminary curetting was so conclusive as to the existence of carcinoma of the body of the uterus that the microscopist's report was not waited for, and a week after the first operation, at which both ovaries were removed for soft, rapidly-growing, and already degenerating cystic carcinoma, the uterus was removed by the combined abdominal and vaginal method. The only reason why the uterus was not removed in the first instance was that the patient, when curetting had been done and the universally adherent tumours of the ovaries had been removed, showed signs of having had as long an operation as was compatible with her safety. Dr. Lewers had spoken of the ovarian disease being in his case secondary to the uterine. He (Dr. Cullingworth) would like to hear upon what evidence that opinion was based. In the earlier of his own cases the reporter of the Clinical Research Association expressed the opinion that the ovarian disease was in that instance primary and the uterine secondary. In the second case, the one now under treatment, it seemed to him very difficult to say which was primary—the ovarian disease or the uterine.—Dr. H. RUSSELL ANDREWS said that Hitschmann of Vienna, who had been studying the histology of carcinoma of the body of the uterus for some time, found that metaplasia, change from columnar to squamous epithelium, was comparatively common in this condition. Dr. Andrews had seen a good many sections showing this change but none in which it was so marked as in Dr. Lewers's specimen.

Dr. A. L. GALABIN showed a specimen of Partial Vesicular Degeneration of the Placenta, in conjunction with a fœtus of five months which lived up to the time of the delivery. He saw the patient in consultation with Mr. E. Morgan Hearnden. She was 32 years old and had had four previous pregnancies (twins once). In the earlier months of the pregnancy she suffered from sickness. For three weeks she had appeared very ill, with weakness, cardiac symptoms, and rapid pulse, and the abdomen had increased rapidly in size. The pulse was 120. The abdomen was found to be nearly as large as at full term of pregnancy. The uterus contracted as usual and there was no rigidity or evident tension. The contents seemed to be mainly fluid, but signs of a living fœtus were made out with some difficulty. The finger was passed in through the cervix and felt the membranes and fœtus. The patient looked ill but not pallid enough to suggest hæmorrhage. Dr. Galabin thought that the case was probably one of hydrops amnii. He advised induction of labour and tried on the spot to separate the membranes around the os. The result was that labour pains came on during the same night. On the next morning Mr. Hearnden ruptured the membranes and an enormous quantity of blood and clots was expelled. The patient became alarmingly collapsed but eventually rallied. A number of vesicles came away with the blood. The placenta was cleared out of the uterus by hand. The placenta showed scattered vesicles pretty uniformly throughout, but a large proportion of chorionic villi remained normal. Its uterine surface was completely broken up, not continuous, decidua serotina being visible. The larger vesicles which escaped separately were mostly about half an inch in diameter. The patient recovered well and had no return of hæmorrhage or indication of deciduoma malignum. It was remarkable that not a drop of blood escaped externally though the patient had what was probably a concealed accidental hæmorrhage going on for three weeks.—The case was briefly discussed by Dr. GRIFFITH and Mr. J. BLAND-SUTTON.

Other specimens were shown by Dr. G. F. BLACKER, Dr. M. HANDFIELD-JONES, and Mr. BLAND-SUTTON.

The PRESIDENT delivered his inaugural address detailing Some Aspects of the Economic and of the Antenatal Waste of Life in Nature and Civilisation.

A vote of thanks to the President for his valuable and interesting address was moved by Dr. J. WATT BLACK, seconded by Dr. HORROCKS, and carried by acclamation.

CHELSEA CLINICAL SOCIETY.

Discussion on Diabetic and Non-diabetic Glycosuria.

THE adjourned clinical debate of this society was held at the Jenner Institute of Preventive Medicine, Chelsea Gardens, S.W., on March 17th, Dr. C. C GIBBES, the President, being in the chair.

Dr. ROBERT HUTCHISON said that from the point of view of dietetic treatment the distinction between diabetic and non-diabetic glycosuria, which it was one of the objects of the debate to elucidate, was of fundamental importance. He could not feel altogether satisfied with Dr. Saundby's distinction that a case was non-diabetic when they knew what the glycosuria was due to and probably diabetic when they did not. A patient might have an injury to the brain which was followed by transient glycosuria and that would certainly be a non-diabetic case, but everyone must have met with cases of undoubtedly true diabetes in which the patient dated the onset of his illness from a nervous injury. He thought that Dr. Pavy's view was more in harmony with clinical observation—namely, that in true diabetes there was a more or less persistent failure of assimilative power as far as the carbohydrates were concerned. To this he would add that in all true cases of diabetes the failure was not only persistent but progressive—i.e., the assimilative power tended, in the absence of treatment, to grow less and less. He believed that this constituted a distinction between the genuine diabetes of young subjects and the glycosuria so commonly met with in elderly and obese persons of gouty tendencies. In the latter, which were sometimes spoken of as cases of the alimentary type, the failure in assimilative power did not tend to go on getting less, but the patient steadily passed a fairly constant amount of sugar in the urine. At the same time this distinction could hardly be regarded as absolute for cases were met with which might for long appear to belong merely to the alimentary group but which finally showed the progressive tendency characteristic of true diabetes. From the dietetic standpoint, therefore, they must accept Dr. Pavy's definition and regard all permanent forms of glycosuria as diabetic and treat them accordingly; the transient forms of glycosuria, on the other hand, were independent of the nature of the diet and were probably due not to a failure of assimilation in the tissues but to an interference with the glycogen reservoirs analogous to that which occurred after Claude Bernard's puncture. The object of treatment in all the persistent cases must be to rid the blood of the excess of sugar. The justification of this was twofold: 1. Hyperglycæmia was in itself a danger, for not only was it responsible for the excessive thirst from which diabetics suffered, but it certainly tended to aggravate, if not actually to cause, many of the complications incidental to the disease. Amongst those were itching of the skin, neuralgias, neuritis, cataract, rhinitis, suppurative affections, and gangrene. He could not accept Dr. Hale White's suggestion that the hyperglycæmia had little to do with these complications. Everyone must have seen cases in which a perforating ulcer or a sloughing cellulitis or a pruritus had obstinately resisted all ordinary treatment but had immediately begun to do well so soon as the excess of sugar had been removed from the blood by dieting. 2. An even stronger justification for diminishing the hyperglycæmia was that, as Dr. Pavy had mentioned, the power of assimilating carbohydrates tended to get less and less so long as their unrestricted ingestion was allowed, whereas after a period of suitable treatment the assimilative power tended to increase and ultimately might almost, or even quite, reach the normal. They had there merely another example of the law that overstrain of a damaged function tended to damage it still more. In diabetes a patient's power of assimilating carbohydrates was damaged and if the blood were allowed to become flooded with sugar the already impaired function became worse and worse. By removing sugar from the blood, therefore, the patient's metabolism was rested so far as carbohydrates were concerned and after a period of such rest it was found that he had acquired in some measure the power of dealing with

those substances. They had re-educated his carbohydrate-assimilating organs to some degree. The ease with which the hyperglycæmia could be abolished varied greatly in different cases. In some a partial restriction of carbohydrates in the food sufficed to achieve the end in view; those were the mild cases. In a middle group the excess of sugar in the blood only vanished when all carbohydrates were eliminated from the food, whilst in the severest cases it was not possible to get rid of the hyperglycæmia by any dietetic means short of actual starvation. The explanation of the last group was, as had been already mentioned by more than one speaker, that some diabetics were unable even to assimilate the carbohydrate which resulted from the disintegration of the proteid molecule, the glucosidal constitution of which had been so clearly pointed out by Dr. Pavy. The practical lesson to be deduced from this was that carbohydrates were not the only ingredient of the food which might require to be restricted in diabetes. Proteids must often be limited too. In severe cases they were just as harmful as, in some instances even more so than, the carbohydrates themselves, for not only did sugar result from their breaking down but, from the nitrogenous part of their molecule, substances might arise which aided in the production of diabetic coma. It followed from this that there was no routine diet suitable to all cases of glycosuria alike. In some, such as the transient non-diabetic cases, it might not be advisable to make any alteration in the diet at all; in others, such as the alimentary forms and mild cases of true diabetes, restriction of carbohydrates was all that was necessary, whilst in the severest cases the carbohydrates might require to be reduced to *nil* and the proteids limited as well. In order to ascertain to which class any given case belonged the proportion of carbohydrate in the diet should be gradually reduced until sugar disappeared; if this did not happen until the proteids were lessened then they were dealing with a severe case. He thought that it was better to reduce the carbohydrates gradually, for certainly cases seemed to occur in which a sudden change in the diet brought on coma. This, however, had been disputed by some eminent observers and he would like to know what had been the experience of members of the society with regard to it. There was an impression that it was impossible to devise a carbohydrate-free diet which a patient would tolerate for any length of time. He could not agree with this view. Thanks to the introduction of the casein preparations, of breads manufactured largely from casein, and of sugar-free milk it was now possible to construct quite a tolerable diet almost entirely free from carbohydrates. He agreed with Dr. Saundby about gluten bread and never ordered it now that the casein breads were obtainable. He had difficulty in understanding the prevalent idea that toast was less injurious to diabetics than ordinary bread. Patients repeatedly said that they never touched bread, "only toast." As a matter of fact, toast contained weight for weight a considerably higher percentage of carbohydrates than ordinary bread. He could not speak too highly of the advantages of sugar-free milk as an aid in dieting diabetics and he could not at all agree with Dr. Hale White that a limited amount of ordinary milk usually did no harm. He had repeatedly seen the sugar considerably increased by even one pint of ordinary milk in the day. Dr. Saundby had spoken of alcohol as an exciting cause of glycosuria. He would be sorry if it should be inferred from this that alcohol was injurious in diabetes. Quite the contrary was the case. It was of the greatest assistance in the dieting of these cases and especially seemed to make it easier for the patient to take plenty of fat which, after all, was the most important thing of all for every diabetic, fat being the one nutritive constituent of the food which seemed to be free from danger for those patients. If they succeeded in arriving at a diet which removed all sugar from the urine and on which the patient did not lose weight he should be kept upon it for a few weeks and his tolerance of carbohydrates again tested, when it would probably be found to have increased. He had heard with interest Dr. Pavy's statement that the return of tolerance was accompanied by unpleasant epigastric sensations and by loss of weight. Though he would not venture to contradict such an eminent authority, he was bound to say that he had never observed those symptoms and was at a loss to think of any possible explanation of them. In the very severe cases in which even considerable restriction of the proteids failed to remove sugar from the urine it was better to allow the patient a certain amount of carbohydrate, chiefly because it was in that way easier to get him to take a sufficiency of fat. In conclusion Dr. Hutchison touched briefly on the dietetic treatment of coma and the use of drugs in glycosuria.

Dr. H. W. G. MACKENZIE discussed the difference between the non-diabetic and the diabetic forms of glycosuria as met with in actual practice. He said that they were constantly in difficulties as to what glycosuria meant. He referred to Dr. Hale White's opening remarks in which attention was drawn to possible sources of fallacy in the test for sugar commonly employed. A little sugar was a dangerous thing to diagnose with certainty, and yet medical examiners in their reports for life insurance on the strength of a slight change in colour of Fehling's solution on boiling asserted not infrequently the presence of a trace of sugar. Sometimes the Fehling's solution was at fault, sometimes the reduction was due to glycuronic acid, creatinin, uric acid, or some such substance. To avoid errors they must first test the Fehling's solution by boiling with an equal volume of water for two minutes. If the solution was in good condition no change would take place in it. They next must see that not more than half a volume of urine was added to the Fehling's solution and that the mixture was only brought to the boil. Almost any concentrated urine, if boiled with Fehling's solution for some time, would produce a change in colour. If the test had been properly carried out and only a greenish-yellow colouring resulted, it was not possible to say whether sugar was present or not without further tests. He thought that Dr. Pavy's definition of diabetes would materially help to differentiate glycosuria due to diabetes from that which was not. Diabetes was a more or less persistent impairment of the assimilative action for carbohydrate food. It was this greater or less persistency of glycosuria which, according to Dr. Pavy, constituted diabetes. He himself wished more particularly to consider those cases of glycosuria which were of a temporary and transitory character, which approached the borders of true diabetes and always required special thought and consideration. He thought that if sugar were present more or less persistently but only in small quantity and there were no symptoms of diabetes from a clinical point of view it was preferable to call the case one of glycosuria. A considerable proportion of over-fat persons occasionally passed sugar in their urine. It had been said that glycosuria occurred in about 33 per cent. of all cases of marked corpulency. The deposit of fat in the tissues was nature's way of dealing with a greater supply of carbohydrate than was required to supply the needs of the tissues. But there was a limit to the powers of storing up fat and then sugar was passed on into the urine. If these cases were taken in hand in time and appropriately dieted sugar would probably entirely disappear and the amount of fat in the body might be reduced to safer limits. He looked upon the occurrence of glycosuria in a stout person as a danger signal indicating the need of proper diet and regimen. The immediate prognosis was favourable, but on the whole those cases were not "good lives." Out of 50 deaths from diabetes which had occurred among the insured in the British Empire Mutual Life Assurance Company eight were over-weight cases. The average age at entry was 40 years and the average age at death was 58 years, so that they fell short of the expectation of life by about eight years. In some gouty subjects sugar was occasionally and intermittently present, usually in small amounts. According to von Noorden gout in middle life might be followed by glycosuria in later life or attacks of gout might alternate with the presence of glycosuria or an attack of gout and glycosuria might coexist.

Dr. W. EWART said that he had known the days when it was the fashion to treat diabetes by giving opium, but he could not say that it was a satisfactory method of treatment. He did not advocate the administration of opium because it tended to retard metabolism; the only chance for the young diabetic was to supply that energy, the lack of which was so detrimental. If they could not supply the required energy they could supply the food and endeavour by all hygienic measures to help the patient to return to a more mixed diet which must be the foundation of the strength of the body. Of late years he had had in young cases good results from this method of treatment. He had been content on this plan not to be too exacting as regards the entire disappearance of sugar from the urine. He had been satisfied with the patient gaining strength and the power of enjoying life at the cost of still passing a little sugar. He considered that in the case of a young man almost reduced to inability to take any exercise

the best treatment was by the means he had advocated to restore the vigour of the patient so that he could play games and take outdoor exercise. In his opinion that patient was better off under those conditions, even if he were still passing a small amount of sugar, than if he were being plied with sedative medicine and submitted to restricted diet. Of course, he knew that there were many cases which were too far gone to admit of their being treated in that way, but there were many which if taken sufficiently early would yield good results.

The PRESIDENT said that it was generally stated in text-books of medicine that in conditions of chronic venous congestion sugar was found in the urine. That was an exceedingly indefinite statement. He had gone through 200 consecutive cases in which there had been chronic venous congestion the result of valvular heart disease. In 171 of these cases albumin was present in the urine, but sugar, as far as it could be traced by Fehling's solution, was only found in one instance and appeared to be purely dependent on alcoholic excess, as it was only evident after excessive indulgence in that respect. The President was therefore of opinion that in cases where there was chronic venous congestion sugar was not of common occurrence.

Dr. HALE WHITE in closing the debate said that it could not be too strongly insisted that glycosuria was only a symptom and probably not the most important symptom of diabetes, for there was no reason for thinking that death was ever directly due to glycosuria while it certainly was often due to another symptom—namely, coma. Glycosuria, or to be more accurate, dextrosuria, was a symptom of diabetes, as albuminuria was of Bright's disease, but both occurred in other conditions than diabetes and Bright's disease respectively and a patient with diabetes might be desperately ill when he had but little sugar in his urine as a patient with Bright's disease might be near his end with but little albumin in his urine. In both diseases the most important thing was to understand the formation of the coma-producing-poison. In diabetes metabolism was perverted in at least six ways: there was the failure to use sugar; there was its production from proteid; there was the effect that ingested sugar had in exciting sugar formation; there was the formation of oxybutyric acid and its allies; there was, probably separate from the last, the low tension of carbon dioxide in the tissues; and there was the formation of the so-called fatty blood. Dr. Hale White thought that more progress would be made by studying these together rather than separately. Dr. Pavy's remarks had raised the question whether it was necessary, for a case to fall in the composite category, that some of the excreted sugar should come from decomposition of proteid. He (Dr. Hale White) thought that in a composite case some of the sugar ultimately had this origin, but in a slowly progressing composite case the sugar in the urine was probably for many years derived entirely from the failure of the body to oxidise it. Dr. Pavy's remarks as to the difficulty of dealing with cases in which sugar was only occasionally present would appeal to all. It was most remarkable to observe how sometimes there might be a large amount of sugar in the urine and within two hours none at all. The great difficulty with these cases was to decide whether they were the early stage of genuine composite diabetes or only alimentary glycosuria. If there was no ferric chloride reaction time only could show. They could probably all bring to mind cases supporting Dr. Pavy in his statement that little sugar did not necessarily mean that the case was not one of genuine composite diabetes; the patient might be suffering severely from this disease with an intense ferric chloride reaction and yet have but slight glycosuria. Dr. Saundby had referred to alcohol and had suggested that it was a cause of diabetes. In connexion with this it must be remembered that some of the instances of glycosuria after excessive consumption of alcohol were very likely examples of alimentary glycosuria rather than genuine diabetes and were probably due to a premature wearing out of the tissues. Many of the cases which in Germany followed excessive beer-drinking belonged to this class. Many alcoholic drinks contained much sugar and all alcoholic drinks contained other substances than alcohol. There was often too great a tendency to ascribe disease to alcohol when all that was known was that it followed the ingestion of alcoholic drinks. There was, he thought, no proof that absolute alcohol could produce genuine composite diabetes and also there was no proof that unsweetened alcohol in moderate quantities was harmful to diabetics. Until this was shown to be the case it would be well often to allow alcohol to diabetics, for their carbohydrate-free diet was short of energy and an ounce of brandy yielded about 90 calories. Lævulose had been deprecated because of its expense, but if a diabetic could take two ounces of lævulose he gained 250 calories and the cost of this amount of lævulose was just under a shilling. The cost of four ounces of brandy was well under a shilling and represented 360 calories, so that a diabetic could by spending about one and ninepence in brandy and lævulose obtain 610 calories. Dr. Saundby had alluded to the respective value of potatoes and toast for diabetics, but it must be remembered that bread contained 50 per cent. of carbohydrates and 40 per cent. of water. The effect of toasting was to drive off the water, so that toast was little but carbohydrates while potatoes only contained about 18 per cent. of starch. Before it could be accepted that there was any special value in potatoes for a diabetic, comparison must be made not between toast and potatoes but between equal weights of the carbohydrates in toast and those in potatoes. The chief part of Dr. Bradford's remarks had been directed to pointing out that probably different cases of diabetes owned a different morbid anatomy and a different pathology. With that they would all agree. The history of medicine showed that the more diseases were studied the better able were they to see distinctions between what were regarded as the same. Whether Dr. Bradford's suggested distinctions would be those ultimately adopted time only could show. Everyone would agree with Dr. Hutchison that clinically one of the most important questions was the distinction between diabetic and non-diabetic glycosuria. The distinction was not of essential importance when considering treatment, for it was allowed that in all cases, whether examples of diabetes or only examples of alimentary glycosuria, the object of treatment was the same—namely, to diet the patient so that sugar would disappear from the urine. The distinction would be, if it could be made with certainty, of essential importance from the point of view of prognosis. Unfortunately, it was rarely possible to be certain whether a patient who was passing sugar in his urine was only suffering from alimentary glycosuria or whether he was suffering from the early stage of diabetes, unless the urine contained oxybutyric acid or its derivatives and the sugar was quickly controlled by diet. The proper treatment of such a case was of the greatest importance; the urine must be examined from time to time, especially after an ordinary meal, and directly that it was found that such a meal led to glycosuria the patient must again be dieted. But if the patient refused all treatment the distinction between alimentary glycosuria, or, as some called it, "alimentary diabetes," and genuine diabetes, or as Dr. Pavy called it, "composite diabetes," would usually soon show itself, for, as Dr. Hutchison urged, the failure to utilise sugar was in the case of genuine or composite diabetes progressive, but this was not so in the alimentary form, or at any rate the failure progressed very slowly. A distinction based upon the rate of progress, although of great clinical value, was of little pathological value and he (Dr. Hale White) suggested that one pathological distinction between the two conditions lay in the fact that in genuine diabetes, if untreated, the output of sugar in the urine became greater than could be accounted for by that in the food, and, indeed, often there was sugar in the urine when there was none in the food, showing that the sugar had been formed from proteids, while in alimentary diabetes all the sugar in the urine was derived from the carbohydrates in the diet. Probably a further distinction lay in the fact that the genuine diabetic sooner or later excreted oxybutyric acid or its derivatives in his urine in large quantities while this phenomenon was not a characteristic of alimentary glycosuria and lastly, the genuine diabetic might at any time become comatose while the person suffering from alimentary glycosuria had not the tendency to diabetic coma. Patients suffering from genuine or composite diabetes who ascribed their illness to an injury of the nervous system were sometimes met with, but he doubted whether much attention ought to be attached to this unless a number of cases in which the nervous lesion was found after death were published. It would be remembered that the subject was threshed out at the Pathological Society of London in 1883, when it was shown that the appearances in the central nervous system which had been thought to be characteristic of diabetes were either normal or due to faulty methods of preparation and it was further shown that there was no

special liability of inmates of asylums to diabetes. That injuries of the central nervous system would produce transitory glycosuria was quite undoubted, but that nervous injury would cause composite diabetes was very doubtful. With regard to hyperglycæmia as a cause for some of the symptoms, there was no doubt that some—i.e., polyuria and pruritus—were due to it, but many were set down to hyperglycæmia upon insufficient evidence. For example, the cases of persons who had cellulitis and did not improve till the sugar had been removed from the blood had been cited. The means adopted to remove the sugar led to an increase of weight, a general improvement of health, and, if the patient had diabetes, to a diminution of oxybutyric acid in the urine. Who could say to which alteration in the patient the healing of the cellulitis was due? If anyone maintained that it was due to the disappearance of the sugar it lay with him to explain why all people with hyperglycæmia did not get cellulitis and to induce cellulitis by the experimental induction of hyperglycæmia. It was better to be content with saying that certain symptoms were perhaps connected with hyperglycæmia than to assert, as some authors did, that they were due to it. He quite agreed with Dr. Hutchison as to the advantage of the casein breads and also that if a patient was on a carbohydrate-free diet the addition of even milk to the diet might lead to an increase of sugar in the urine. In some cases, too, sugar-free milk, as it had been called, which was suggested by Dr. R. T. Williamson, was of advantage; but, on the other hand, patients were often too strictly dieted and they appeared to derive benefit from a small amount of carbohydrates and it must be remembered that in the opinion of many too sudden strict dieting led to coma. If in any case it was felt that some carbohydrates should be allowed milk was useful and in actual practice it would be found that the cases in which a little milk might be given with advantage were not few although no doubt in some the lactose in it was harmful. He was also in accord with Dr. Hutchison in what he had said about the value of alcohol and fat.

LIVERPOOL MEDICAL INSTITUTION.

Exhibition of Cases.—Defective-minded Children.

A MEETING of this society was held on March 19th, Mr. RUSHTON PARKER, the President, being in the chair.

Dr. PHILIP NELSON reported a case of Nasal Polypus of Unusual Size, the growth measuring when fresh two and a half inches by one and a half inches. It occupied the left nasal passage, the septum being much deflected to the right, and it was readily removed by the snare; the right side was cleared by the use of Mackenzie's forceps. The polypi as usual were attached to the ethmoid bone.—Mr. J. BARK agreed as to the unusual size of the polypus and also as to the use of the snare. In cases where the pedicle was situated in the hiatus semilunaris he found the use of forceps better.

Dr. KARL A. GROSSMANN showed a case of Paralysis of both Third Nerves and of the Left Fifth Nerve. The patient, a woman, 38 years of age, had been well up to four years ago, when a heavy cold combined with headaches attacked her. The headaches persisted and a year later she noticed numbness on the left side of the face and the left eye became inflamed. At present the eyes could not be raised above the horizontal line and could only be moved downwards about 45°; the movement inwards was also limited to about 45°. The lids did not droop but the left lid did not open quite as much as the other, otherwise the lids could be opened and closed freely. The left cornea showed a large adherent leucoma, the pupil was narrow and adherent posteriorly, and there were two opacities under the capsule of the lens. There was anæsthesia of the left side of the face, the cornea, and the conjunctiva, and taste was absent on the left side of the tongue. On opening the mouth the jaw and tongue went to the left side. Dr. Grossmann thought there was a circumscribed meningitis (gummatous?) on the left side of the pons.—Dr. T. R. BRADSHAW said that the symptoms described and the escape of the great occipital and posterior auricular nerves indicated the course of the fifth nerve near the pons rather than the nuclei as the site of the lesion. The association with extensive palsy of the third nerves pointed to a lesion extending forwards to the interpeduncular space and he agreed with Dr. Grossmann that in all probability the lesion was syphilitic meningitis.

Mr. J. DOUGLAS CRAWFORD showed a boy, aged 17 years, in whom the Right Inferior Extremity was three inches Longer than the Left. The cause was probably lymphatic obstruction of congenital origin. The skin over the tibia and thigh was hyperæsthetic. The subcutaneous tissue in the same regions, as well as over the face, was soft and pulpy. Proptosis of the right eyeball was present. Whilst in hospital the head of the femur became separated from the neck.—Dr. BRADSHAW suggested acromegaly as a possible cause of the condition.—Mr. R. W. MURRAY and Mr. DAMER HARRISSON also spoke.

Mr. DAMER HARRISSON read a paper upon Defective-minded Children, illustrating the various types by lantern slides. After discussing the features of some individual cases he suggested that in the education of these children muscular coördination must lead the way and the intellectual development be dealt with later. In all or most of these cases some physical defect was present and malnutrition was very common, and these conditions must be seen to. He thought that congenital cases responded better than those born normal but in whom arrest from one cause or another occurred. Finally, Mr. Harrisson emphasised the necessity for prolonged after-care and the wisdom of providing colonies for such individuals.—Dr. STANLEY A. GILL thought that a good many of these cases were due to some preventable fault in the ancestry, such as alcoholism and injudicious marriages; he was not quite sure whether injury at birth by midwifery forceps had not a great deal to answer for. Further, the schoolmaster must be reckoned with who, through his ignorance of even the elements of physiology, often forced a child's brain beyond what it was capable of bearing and thus brought about an early mental breakdown.—Mr. W. N. CLEMMEY thought that home influences reflected themselves in the career of defective-minded children. He agreed with Mr. Harrisson that the care of these children after leaving school demanded attention.—Dr. J. LLOYD ROBERTS said that his experience of imbeciles at the Eastern Counties Asylum for Imbeciles was that although most of the cases were capable of a certain amount of improvement, yet in the vast majority this was so slight that throughout their lives the patients would continue to require supervision and protection. The practical utility of the study of these cases lay therefore in the consideration of two points—(1) whether any of the causes were preventable; and (2) what were the best means to be adopted for the care of these cases. He agreed with Mr. Harrisson as to the desirability of the formation of colonies. He thought that injuries at birth were less often due to forceps than to delay in using them.—Mr. HARRISSON replied.

PATHOLOGICAL SOCIETY OF MANCHESTER.

Exhibition of Specimens.

A MEETING of this society was held on March 11th, Dr. H. A. G. BROOKE, the President, being in the chair.

Mr. F. A. SOUTHAM mentioned a case where a Tumour had been removed from the gluteal region of a male, aged 58 years.—Dr. C. H. MELLAND described the tumour as an angio-sarcoma. A great part of the section simply showed a mass of round and oval cells which were in places undergoing degeneration or were the seat of hæmorrhagic infiltration. Other spots showed, however, most distinctly the way in which the tumour cells were originating from the connective-tissue cells in the walls of the smaller arteries.

Mr. A. H. BURGESS exhibited the specimens from a case of Angio-sarcoma originating in connexion with the ilium with metastases in the ribs and right kidney.

Dr. ARCHIBALD DONALD and Dr. MELLAND demonstrated the specimens from a case of Tuberculous Peritonitis.

Dr. P. R. COOPER showed a specimen of Atrophy and Hour-glass Contraction of the Stomach following Chronic Ulcer. The patient was a female, aged 74 years, who had died from exhaustion, chiefly owing to her inability to swallow food. The symptoms of gastric ulcer had been entirely latent, although, when young, "indigestion" had been complained of. The stomach was constricted to a narrow passage near its pyloric end and on each side of the constriction was the circular depressed cicatrix of an old ulcer.

Dr. COOPER also showed a specimen of Chronic Intestinal Obstruction due to carcinoma of the rectum which had been relieved by colotomy two years previously. The growth itself

had made comparatively little headway, but, unfortunately, a loop of small intestine which dipped down into the pelvis had become adherent to, and involved in, the growth, causing a secondary and fatal obstruction.

Dr. W. E. FOTHERGILL made a preliminary communication on Congenital Hyperplasia of the Thyroid Gland and showed an example of the condition observed in connexion with maternal eclampsia. Chlorate of potassium had been administered during pregnancy on account of habitual abortion. At the thirty-eighth week eclampsia supervened but was tided over by medical treatment which included the administration of thyroid substance. Three days later a living child was born, but succumbed an hour after birth, a hypertrophied thyroid gland together with congestion of the veins of the neck interfering fatally with respiration. The thyroid after removal weighed over 25 grammes. On section it was seen to consist of small irregular acini almost without lumen and containing no colloid material. The normal thyroid in the fœtus at term was found to weigh under two grammes and to contain a considerable amount of colloid substance. The condition of the enlarged gland in question appeared to be one of hyperplasia interfering with normal functional development and probably toxic in origin.

Dr. A. HILL GRIFFITH showed specimens of Ocular Tuberculosis.

GLASGOW NORTHERN MEDICAL SOCIETY.

The Mortality from Uterine Cancer and the Medical Profession.

IN THE LANCET of March 21st, p. 812, we referred briefly to the meeting of the Glasgow Northern Medical Society which was held on March 3rd, the President, Dr. J. STEEL MUIR, being in the chair. A discussion took place, the subject being, Can anything be done by the medical profession to diminish the frequency of, and to lessen the mortality from, cancer of the uterus? The discussion was opened by Dr. J. K. KELLY in a paper of which the following is an abstract.

After referring to the fact that women needed education as to the meaning of amenorrhœa or of other disturbances of the menstrual function, Dr. Kelly pointed out that the medical education of the public depended upon the medical profession and if the medical profession could lay down some definite rules as to the causation of cancer and the means of checking the mortality from it, these rules would soon be adopted and acted upon by the public. Cancer of the cervix uteri was a frequent disease because cancer was well known to affect most those parts subject to persistent irritation. The cervix of the child-bearing woman was often exposed to irritation at the time of labour and the frequency of cancer of the cervix increased with the number of children. One way of lessening injury to the cervix was to allow plenty of time for its dilatation in labour. If, in spite of all care, lacerations occurred they must be sutured at once. Other causes of irritation were leucorrhœa and gonorrhœa. Much might be done by careful management of labour and by careful treatment of cervical catarrh, whatever its cause, to lessen the frequency of cancer. With regard to whether there were any means of lessening the mortality from cancer the question was mainly one of diagnosis. Complete extirpation of the diseased part was the only method at present known for the "cure" of cancer. Complete extirpation, especially in the cervix, could only be performed at an early date in the course of the disease. Therefore diagnosis of the disease at an early stage was necessary; but medical men seldom had the chance of recognising cancer at an early stage. Dr. Kelly continued: Here, I think, the most important rule to follow is to give plenty of time for the dilatation of the cervix during labour. Except in deformed pelvis you may lay it down as an axiom that a slow first stage is without danger. I have heard that it is a boast with some men that they spend very little time over their confinement cases. They rupture the membranes, dilate the cervix manually, and deliver with the forceps. The injury to the cervix in these cases must be incalculably greater than when the equable elastic liquid pressure of the amniotic sac and the uniform tension of the uterine wall bring the act of dilatation to completion without artificial aid. Non-interference with the natural dilatation of the cervix will often obviate the occurrence of laceration and so diminish the injury. Women are unaware of the significance of hæmorrhage and of pain and it is their carelessness about these symptoms that is the main reason why we have so often no opportunity of recognising cancer at all till it is fairly advanced. Occasionally, however, we have the opportunity and do not seize it. How often is it the case that a woman goes to her medical man and says: "I am changing too often. Can you not give me something to stop it?" And her medical attendant says: "Oh yes, I'll give you some ergot, and after you have used it for a time you must let me know how you are. If you are still losing too much I shall have to examine you." And after a few months she comes back and he examines her—and the opportunity has been lost. Why did the medical man not examine her at first? In no other region of the body should we think of treating hæmorrhage with a bottle of ergot without ascertaining the cause of the bleeding. But there is a general idea that ergot has a special action on uterine hæmorrhage and that idea is responsible for more harm, perhaps, than all the good that that valuable drug has ever done. Perhaps another reason why the patient is not examined is that she looks so well. She is possibly stout, well coloured, hearty, and vigorous, without any suggestion of illness in her appearance. Far less is there any suggestion of cachexia and it is an idea very prevalent in the profession that we should expect cachexia as one of the symptoms of cancer. This is a most dangerous idea. It is not uncommon to find advanced cancer in a woman who looks quite healthy and, as a rule, cachexia develops only at an advanced stage of the disease. A patient who is cachetic has reached the hopeless stage and if we wait for cachexia we wait till it is too late. These three facts, then, I would like to insist upon with all the stress in my power. When there has been long-continued hæmorrhage, when there has been severe pain, and when cachexia has set in, the cancer is beyond the early stage and is probably too late for cure. We must not wait for these symptoms; they are not to be regarded as mere warnings of the attacks of the disease. They are rather indications that the attack has been a successful one and the victim is already doomed. The three symptoms of cancer of the cervix on which the main importance is generally laid are bleeding, pain, and fœtid discharge. We may briefly consider the place of these symptoms in the diagnosis. The bleeding most significant of cancer is that which occurs after the menopause. If a woman has reached middle life and has ceased to menstruate there should never again be a return of hæmorrhage from the vagina. If it does return it indicates cancer in the vast majority of cases. In earlier life hæmorrhage more frequently indicates myoma or salpingitis or metritis or retroversion, but even at an early age cancer is not unknown and the cause of the bleeding ought to be ascertained in all cases by physical examination. Pain of a severe kind is often a very late symptom of the disease and I incline to think, when a severe pain occurs early in the course of cancer, that it indicates a rapidly advancing form. Fœtid discharge occurs sometimes from other causes than cancer. It is often present in endometritis and indicates merely that the discharge has had time to become putrid before escaping from the vagina. But the discharge is usually in small quantity. A copious offensive discharge even at an early age generally indicates cancer, and cancer, too, which has passed beyond the early stage. These three symptoms are not usually indications of early cancer. When they are present the case has advanced beyond the early stage. They are rather to be considered as urgent symptoms and indicate the need for immediate search after their cause. No woman who attends at the consulting-room complaining of one, and still more of all, of these symptoms should be allowed to leave without a vaginal examination being made. But I would like to plead for more than this. When bleeding and pain and fœtor are present the case is very probably an advanced one. We should not wait for the development of these symptoms. Any pelvic discomfort whatever should be traced to its cause and this rule should be laid down with especial force in the case of women who are at, or are approaching, middle life. So much depends upon early recognition of the disease that we should exercise the greatest circumspection in tracing every pelvic trouble to its source. Wherever there is pelvic trouble an examination of the pelvis should be made. It is only when both physician and patient are alive to the importance of this rule that we shall have a fair chance of an early recognition of the disease. What, then, are we to expect to find on making an examination? We are not to

expect a tumour in early cancer. When the cervix forms a large mass, whether this be a smooth nodular tumour or that curious broken growth which has been well named cauliflower excrescence, the disease is already far advanced, probably too far for extirpation. Cases of this kind are again and again sent into hospital as suitable cases for operation when the time for operation is long past and the cases are hopeless. In the early stage cancer occurs either in the form of a small hard patch or of a small ulcer, usually at the edge of the os externum. The most common hard patch on the cervix is caused by some cicatrix resulting from a laceration. But the smooth firm linear borders of this can be easily recognised as cicatricial and on examination by the speculum it is easily distinguished by its non-vascularity from the mucous membrane which it divides. Another common hard nodule on the cervix is formed by a distended follicle, but these are usually numerous and give the feeling of well-defined, I might say shotty, tumours imbedded below the surface. The cancerous nodule, on the other hand, is on the surface, is irregular, shades off towards its borders which are ill-defined, and on examination by the speculum the little nodule is hyperæmic and not pale as compared with the neighbouring mucous membrane. The small hard patch is probably the first stage of cancer, but usually the earliest form with which we meet is the small ulcer. There is an idea still prevalent, though fortunately it has not the prevalence that it once had, that ulceration of the cervix is not uncommon even apart from cancer, and when men meet with an ulcer of the cervix they are not at first alarmed by it. Another idea is that syphilitic ulcer of the cervix is not uncommon and if there is any suggestion of syphilis in the case, such as frequent abortion, quite apart from any distinct history of syphilitic infection, we are sometimes advised to try anti-syphilitic treatment for a time. My experience, on the other hand, is that if we have an actual ulceration of the cervix it is hardly ever anything but cancer. We meet with a tuberculous ulcer on rare occasions, with syphilitic ulcer on still rarer occasions, at least in Glasgow, and I may say that we never meet with any other ulcer of the cervix except the decubitus ulcer of prolapse, and this is easy enough to account for and to heal. All other ulcers of the cervix are cancerous. I am convinced that the knowledge of this fact would go a long way in sending cases of cancer to us in an early stage. I must of course guard against misunderstanding here. One of the most common appearances at the os is a red raw-looking surface which very closely resembles a granulating ulcer and was, in fact, regarded as an ulcer by the early gynæcologists. This, which is now misnamed erosion, is not an ulcer; in many cases it is merely the lining membrane of the canal of the cervix exposed by the gaping of a laceration. In other cases it represents an advance of the proper cervical epithelium beyond its normal limits on to the surface covered by the paler squamous epithelium of the vaginal wall. This erosion is one of the evidences of that cervical catarrh which I have already referred to as so common and as probably the main cause of the frequency of cancer in the cervix. The epithelial overgrowth, in fact, which is normal except for its situation may be conceived in cervical catarrh as requiring only a further development of proliferative energy to transform it into a cancerous condition. But even the digital examination of these erosions at once distinguishes them from an ulcer. Their smooth, velvety, and rather raised surface is quite different from the excavated and usually harsh surface of an ulcer. But if doubt arises—and this is the special point which I wish to reach—the doubt can be solved. If there is the slightest suggestion of ulceration of the cervix either on digital examination or on examination by the speculum, then a part of the suspected cervix should be removed for microscopic examination. There are some men who still express doubt as to the histological proof of cancer. They will tell you, "We sent a piece of tissue to a pathologist and he said that it was epithelioma and yet the case got better and is living years after"; or "We sent a piece to another and he said that there was nothing malignant about it and yet it turned out to be cancer after all." We may be sure that the men who speak in this way are not themselves pathologists and it is unreasonable to slight the labours that have been spent and the results that have accrued from the investigations on this subject. There are, of course, early stages in cancer growth when the difference from normal structure is so slight that no one can say with certainly that cancer is present, but there may be enough to arouse suspicion. And if suspicion be aroused we are already on the way to prevent the progress of the disease. For if the case is suspected it will be watched, and if it is watched the advance of the disease will not be great before we can be certain about it. For when the cancer is beyond what might be called its embryonic stage there can be no doubt whatever about the microscopic examination. This, then, is the basis on which we plead for an early histological examination of a suspected cervix. And if we get a cancer thus early we have good ground to expect a cure by operation. Dr. A. H. N. Lewers in his recent book on Cancer of the Uterus puts forward a suggestion to facilitate early diagnosis. This suggestion is that the Cancer Commission or some institution such as the Royal College of Physicians of London or the Royal College of Surgeons of England should print a leaflet mentioning the essential facts which it is desirable that women should know regarding the early indications of cancer and especially regarding hæmorrhage. He thinks that this leaflet might be distributed by medical men to all—matrons, nurses, district visitors, and so on—who could put such knowledge to good purpose. This suggestion of Dr. Lewers is so far a good one and would aid us to a certain extent in the early detection of cancer. But we need to anticipate the development of pronounced symptoms. We must if possible detect the disease before any of its classical indications are present. And for this such a leaflet would be insufficient. The education of our women in the knowledge of disease has hitherto been, and will always naturally be, the unconscious result and, as it were, the bye-product of the work of the physician. When we ourselves realise the important facts in a diagnosis our knowledge gradually filters through to those who are tending our patients and to the patients themselves. If we ourselves, then, would believe that the treatment of cancer is hopeful when we diagnose it early and if we continually strive after such early diagnosis the opportunities for early recognition of the disease will become more frequent. Public opinion, as I said at the beginning, will soon come to our aid and we shall have good ground to hope for a lessening of the ravages of this disease.

Dr. JOHN RITCHIE asked if the cervix should really be examined in every case in the same way as the perineum in all labours as a matter of routine. He believed that the teaching of most books was against such a thing. Still, personally, in many cases he regretted that he had not examined the cervix after labour.

Dr. P. MCBRYDE, speaking about the age at which cancer appeared in women, said that many thought that it was only after the menopause that the disease occurred. Five cases had occurred in his own experience under the age of 32 years.

Dr. C. F. SPINKS asked if it was always possible to examine the cervix with a speculum without a special light.

Dr. JAMES TODD agreed with Dr. Ritchie in some of his remarks with regard to the examination of the cervix and thought it quite impossible to suture every case, especially among the working classes. Indeed, the medical man who sutured these cases would very likely not have the opportunity of attending these again. What was said in the first part of the paper would have very little practical application. The patients were not educated to it.

The PRESIDENT thought that Dr. Kelly had done full justice to the general practitioner as regarded the difficulty of early diagnosis, but he was afraid that it was too often assumed by specialists that the general practitioner was to blame for not recognising cases of cancer in the early stages. If so it was not because they failed to see the importance of early diagnosis, as they were fully alive to it. The general practitioner was not wholly responsible for the failure. Many signs or symptoms were not pathognomonic of cancer, but were also common to those benign conditions of catarrh and erosions which the lecturer had been dealing with. In other cases where the pathognomonic symptoms of pain, hæmorrhage, and cachexia were present it was recognised that the disease was then in the inoperable stage. It was often very difficult to come to a decision because the patient sometimes did not mention the condition at all and also would not allow an examination when it did appear to be necessary. In this connexion he instanced the case of a lady who had recurring hæmorrhages from the vagina for a long time and on making an examination a tumour was found

which was afterwards removed by Professor Simpson of Edinburgh. On hearing from the lady's own medical adviser later, he was informed that consent to an examination had all along been withheld by the patient, but that whenever a stranger had come forward it was allowed. In another case he had called in a specialist where cancer of the cervix was suspected. There were all the usual symptoms present and the specialist had no difficulty in arriving at a diagnosis and therefore pronounced it cancer of the cervix. The patient refused to allow an operation because she felt quite well and she remained so. In closing his remarks the President said that he would take advantage of all the information acquired but he would emphasise the fact that cases were often very difficult to diagnose even when an examination was allowed, and that the practitioner was often harassed with doubt when symptoms compatible with the benign disease were present, thus being constrained at times to advise his patient rather to bear the ills she had than to fly to others that she knew not of.

Dr. J. RUTHERFORD wished to know if douching might not do instead of suturing and still prevent lacerations going on to erosions. He mentioned another cause of cancer which was apparent to his mind—want of cleanliness. In this age of asepticism they must face the question of the introduction of dirty matter during coition. The subject had been shirked formerly by medical men. There was often no bath used in the houses and much filth was introduced to the parts and might have something to do with the cause of cancer. They were all familiar with chimney sweeper's cancer and why might there not be injurious effects from coition in a similar way?

Dr. KELLY after giving thanks to the meeting for attention to his paper proceeded to take up the various criticisms *seriatim*. The fear that the practitioner had of examining the cervix was the fear that some septic material might be introduced. In many cases there was nothing which suggested a laceration of the cervix. There would then be no call for an examination to be made; but when there was much hæmorrhage or the patient had a severe labour they ought to examine the cervix. He explained that it was quite easy to do this. The cervix could be pulled down to the vulva after labour without trouble with volsellum forceps and pressure externally and could then be examined by the eye. If any laceration was seen, it would be even more easily stitched than the perineum. Speaking about the light employed, he thought that the examination would often be unsatisfactory in working men's houses. With a candle and speculum, however, they might see fairly well. It was to be remembered that they should rely more upon touch than sight in diagnosis of disease of the cervix. He explained that laceration of the cervix had been suggested as a *probable* cause of cancer. The resulting ectropium exposed the lining membrane of the cervix to bacteria and acid secretion, the vagina being the receptacle of bacteria of all sorts. There were many cases of cancer under 30 years of age, but it was commonest after 40 years. Dr. Kelly did not want it to be thought that specialists were blaming the practitioner for not diagnosing the cases early enough. Regarding the relationship of the specialist and the practitioner, specialists often did make mistakes in diagnosis and should own to it. He could never understand men who had made a mistake not recognising their error. Douching of the vagina was often quite sufficient to allow the laceration to heal without septic mischief, but the effect of the cicatrix was left. Filth in the vagina had probably a great deal to do with the cause of cancer in the cervix. It should be insisted on that the vaginal douche should be in more common use. Women should lie on the back with a bed-pan below, not as was usually done when the woman sat over a pan. The latter mode would fail to flush the rugose folds of the vagina.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF PATHOLOGY.

Exhibition of Specimens.

A MEETING of this section was held on Feb. 27th, Professor E. J. MCWEENEY, the President, being in the chair.

Dr. HENRY JELLETT showed, with Professor A. C. O'SULLIVAN, a specimen of Double Adeno-carcinoma of the Ovary. It had been removed from a patient, aged about 40 years. At the operation there was no apparent involvement of the pedicle, neither were there any noticeably enlarged glands. The subsequent history of the case was difficult to obtain as the patient refused further treatment. The tumours were inclosed in what appeared to be a dense fibrous capsule but proved to be condensed and flattened stroma of the ovary. On section the greater part of the growth was white, resembling ovarian tissue in its markings, but firmer. In one place there was a large blood extravasation. Through the white substance there were cavities of the size of a pin's head and smaller, and occasionally there were much larger ones forming cysts. The largest of these was filled with a papillary growth and contained a glairy fluid. Under the microscope the tumour was found to consist of a stroma resembling the ovarian stroma, cells with spindle- and rod-shaped nuclei, and a very small quantity of intercellular substance. Professor O'Sullivan said that the only solid ovarian tumour bearing any resemblance to this of which he had seen an account was a tumour described by von Kahlden in the *Centralblatt für Pathologie*.—The PRESIDENT said that the case was undoubtedly one of true carcinoma of the ovary. He had himself observed three cases and in one of them the microscopic appearances were very similar to those seen in this case.—Dr. H. C. EARL said he had examined several cases of cancer of the ovary, probably some eight or more. Both ovaries were affected in each case. In two cases the cancer was in an early stage of mucoid degeneration and in one case at least there were secondary growths in the peritoneum and liver.—Dr. JELLETT said that he did not consider ovarian cancer to be very rare. He had operated on one other case and had seen at least four in the Rotunda Hospital.

Professor E. H. BENNETT showed a series of joints marked by the deposit of a white material closely resembling the urate of sodium seen in true gout, but consisting of calcium carbonate. The deposit was present in the hips, shoulders, sterno-clavicular joints, and was absent from the more distal joints of the limbs.

Professor BENNETT also showed a United Fracture of the Astragalus. The fracture had united without deformity by bone. There was no other fracture either in the bones of the foot or of the leg or the thigh. The specimen was found in dissection and was without history.

Dr. THOMPSON described a case of Primary Cancer of the Liver in a girl, aged 21 years.—The PRESIDENT said that the liver was much enlarged; its surface was studded with secondary nodules, some of them umbilicated. The colour was dull red with a greenish tinge. The nodules, viewed from without, were white. The primary mass was found occupying the centre of the right lobe. It was as large as the closed fist. On cutting into the specimen a most remarkable change took place in its colour, most of the secondary nodules assuming a brilliant grass-green hue on contact with the air. This green hue subsequently extended to the liver parenchyma after the specimen had been placed in formalin. Spectroscopic and other tests showed it to be due to oxidised bile pigment. The cancer was composed of very large epithelial cells closely resembling liver cells, but differently arranged.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held on March 20th, Dr. J. E. Gemmell (Liverpool), the President, being in the chair.—Dr. J. W. Martin (Sheffield) showed a married woman, aged 25 years, in whom there was Complete Congenital Absence of the Left Mamma, associated with defective development of the entire left half of the body, and especially of the left hand and arm. Lactation was fully performed by the normal right breast.—Dr. D. Lloyd Roberts (Manchester) showed a Fibroma of the size of a walnut removed from the interior of the right Fallopian tube through an incision made in its wall. The growth was discovered during the performance of ovariotomy on a woman, aged 56 years, and microscopically showed the typical characteristics of a fibroma.—Dr. E. O. Croft (Leeds) suggested that tubal moles might be removed through similar incisions made in the tube instead of sacrificing the whole viscus.—Dr. Croft showed a series of Three Polypi of the Uterus which illustrated three different conditions and methods of treatment—namely, (1) a small cervical fibroid polypus; (2) a large necrosing fibroid polypus separated from its attachments by the écraseur and delivered with forceps in obstetric

fashion; and (3) an intra-uterine submucous fibroid treated by vaginal hysterectomy, the ovaries being preserved.—Dr. A. Donald (Manchester) read notes of a case of Idiopathic Endometritis. From the age of 21 years the patient had suffered from metrorrhagia and when she came under observation at 32 years of age hæmorrhage had been continuous for seven months. The uterus was then anteflexed with a conical cervix; its consistence was normal and there was no question of gonorrhœa or sepsis. Curetting was twice performed within a few months and for nearly four years there was no irregular or profuse bleeding. Marriage took place, followed by three months' amenorrhœa, which was succeeded by continuous bleeding. Decidual débris was removed, but two months later curetting was again requisite. During the following six years the discharge never stopped for more than 14 days at a time. Atmocausis was tried without avail and finally hysterectomy was performed. The uterus was enlarged, very hard, and in a state of fibrosis. The case was exceptional in the symptom of excessive hæmorrhage but in other respects was typical of a class of cases not infrequently met with.—The President, Dr. S. Buckley (Manchester), Dr. A. W. W. Lea (Manchester), and others discussed the case.—Dr. Buckley described a case of Extra-uterine Pregnancy with attempted Abortion and showed the specimen. The patient was admitted to a hospital where the case was at once regarded as one of ectopic gestation and the symptoms noted during the period of observation pointed to attempts at tubal abortion, but her friends were opposed to operation. Interference became imperative some three weeks after admission by reason of sudden collapse with signs of severe internal hæmorrhage. Laparotomy disclosed a gestation sac in connexion with the left tube which, as adhesions were absent, was easily lifted out and removed, together with about two pints of clot of varying ages. The tube itself was unruptured and its fimbriated end was expanded. The fœtus was about three months old. The patient made a good recovery.—Dr. Roberts and Dr. Croft discussed the case.—Dr. T. B. Grimsdale (Liverpool) read notes of a case of Primary Amenorrhœa with Pyosalpinx occurring in a single woman, aged 22 years. About three years previously she had had some chest trouble from which she had completely recovered. There had never been any approach to a menstrual crisis. The sound passed one and a half inches into the uterus and to the right of the latter there was a swelling of the size of an apricot. Laparotomy revealed a uterus normal in shape but of small size; the appendages on the left side were normal, the surface of the ovary being smooth like that of an olive. The right ovary showed a similar condition, but the tube was enlarged and adherent to the pelvic brim near the cæcum. The tube was removed and found to contain pus. Both tube and pus were examined, but the investigation was entirely negative, no evidence of tubercle being discovered. The virginity of the patient excluded the more frequent cause, and although the tube lay in close proximity to the cæcum and vermiform appendix there was no evidence of disease of the latter. The chief point of interest lay in the presence of a pyosalpinx without symptoms and apparently without any explanation of its origin.—Dr. Lea and Dr. Donald discussed the case.

NORTHUMBERLAND AND DURHAM MEDICAL SOCIETY.—A meeting of this society was held on March 12th, Dr. G. R. Murray being in the chair.—Dr. G. V. Miller showed a girl, aged 19 years, the subject of Congenital Aniridia. The iris was almost entirely absent, there being only a narrow rim at the upper and outer sides. There was a commencing posterior polar cataract but the fundus was healthy. The margins of the lens could be seen distinctly. Some hypermetropia was present.—Dr. H. E. Gamlen brought forward a woman who had suffered from Rheumatoid Arthritis affecting the knees, wrists, and elbows for three years. Previously to treatment she was unable to walk except with the aid of a couple of sticks. Now, after six months' treatment with the high-frequency current, she was able to get about unaided.—Dr. H. Smurthwaite exhibited a man suffering from Syphilis of the Larynx.—Mr. G. G. Turner brought forward a man, aged 23 years, whose eyelids, eyeballs, nose, and upper lip had been completely destroyed by congenital syphilitic ulceration. The deformity was extreme.—Dr. A. M. Martin showed a man, aged 45 years, who contracted syphilis 20 years previously. His tongue some years ago became affected with leucoplakia. 15 months previously an ulcer with hard and raised edges made its appearance about the middle of the tongue. As he objected to operative treatment he was treated with the x rays. After a few applications the ulcer healed but broke down again shortly after and was again healed with the x rays. Six or seven months previously it again broke down and rapidly spread. The lymphatic glands in the right submaxillary triangle became infected. At the operation ten days previously the infected lymph glands, the right half of the body of the jaw, and the whole of the tongue were removed. For the first day he was fed entirely by the nasal tube. Now he was able to swallow from an ordinary feeder and was making a good recovery.—Dr. Martin also exhibited a man who had tuberculous disease of the right epididymis with secondary infection of the vas and seminal vesicle. All these parts had been removed in one piece by means of a combined perineal and inguinal incision.—Dr. T. Oliver brought forward a man who was a bleeder and the subject of a limited neuritis affecting the muscles of the left thigh. Dr. Oliver could not find a cause for the condition.—Dr. Oliver also showed a man, a miner, who through drinking water contaminated with lead had contracted wrist drop. Other members of the same family had been affected with abdominal pain, vomiting, and constipation. The water contained free sulphuric acid which would bring into solution the lead from the containing pipe.—Dr. Smith, from whose district the patient came, had noticed that lately there had been quite an epidemic of lead poisoning. The water came from two springs and had been examined chemically and found to contain free acid, probably sulphuric. He had examined the water direct from the spring but had discovered no trace of lead. After, however, taking some water and allowing it to stand with a piece of lead piping introduced in it, a definite lead reaction was found.—Mr. H. B. Angus showed a youth who after having a cerebellar abscess resulting from otitis media opened, developed Lateral Sinus Thrombosis. For this condition Mr. Angus dissected out the internal jugular vein from the clavicle to the mastoid process. The patient had made a satisfactory recovery.—Dr. Gamlen showed photographs of three severe cases of Lupus treated by the X Rays and Ultra-violet Rays. He also showed a Skiagram of a Chest with a Piece of Steel overlying the Pericardium.—Dr. R. P. R. Lyle exhibited a Myomatous Uterus, Ovarian Cystic Adenoma, and Ectopic Gestation.

BRADFORD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 17th, Dr. H. J. Campbell, the President, being in the chair.—Mr. C. F. M. Althorp showed a child after radical cure of a large Scrotal Hernia, containing the Vermiform Appendix, Cæcum, and part of the Ascending Colon.—Mr. J. H. Mason read notes on a case of Gangrene of the Foot. The patient was an apparently healthy man, 50 years of age, without signs of organic disease. The disease commenced with intermittent pains in the muscles of the calf and thigh. There were attacks of blindness lasting for about an hour and then passing off, leaving dimness of vision. Nothing abnormal was seen on examination of the fundus oculi. The pain passed off temporarily and the man returned to work. Two months after the onset the pain became very bad again. The foot was cold up to the ankle and there was loss of sensation. The calf was very tender. Pulsation could not be felt in the femoral artery below the groin. The pulse-rate rose to 121 and the temperature to 102° F. The pain was partly relieved by morphia. The patient grew steadily worse, the pulse becoming very irregular and not responding to digitalis or other treatment. The gangrene became more pronounced and death ensued some three weeks after the second onset of the pain. Shortly before death there was an attack of inspiratory dyspnœa followed by hæmoptysis.—Dr. D. Goyder, Dr. Johnston, Mr. Horrocks, Dr. Wood, Dr. F. W. Eurich, and Dr. Adolph Bronner discussed the case.—Mr. Althorp read a paper on three cases of Perforated Gastric Ulcer treated by operation. The first patient was a woman, aged 23 years, with a history of gastric trouble for seven years. She was operated on 32 hours after perforation. There was a condition of hour-glass contraction present, caused by a large ulcer, in the centre of which was a perforation. The perforation was situated near the cardiac end of the stomach; much gastric contents had escaped and had formed a perigastric collection. This material was mopped out and the cavity was packed with gauze. The patient did well for ten days, the packing being changed daily. She then developed symptoms of left basal pneumonia

and died on the twelfth day. At the necropsy a small septic abscess was found in the lower lobe of the left lung with consolidation. There was no empyema. The subphrenic space was dry. The second patient was a woman, aged 27 years, who had had indigestion for five years. An operation was performed six hours after the perforation, which had occurred six hours after a hearty meal. There was much extravasation of stomach contents. The perforation was found in the middle of the posterior surface of the stomach. The patient made a slow recovery. The third patient was a man, aged 23 years, who had a typical attack of perforation of the stomach and who was operated on eight hours afterwards. A condition of hour-glass stomach, as in the first case, was found, with a perforation in the cardiac portion. The patient made an excellent recovery.

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society was held on March 13th, Dr. J. Spottiswoode Cameron, the President, being in the chair.—Dr. J. Mitchell Wilson read a paper on the Regulations under the Dairies, Cowsheds, and Milkshops Orders. He gave a *résumé* of the various orders made under the Contagious Diseases (Animals) Acts and of the model regulations issued by the Local Government Board. With regard to the lighting of cowsheds he suggested that windows in the walls might be supplemented by a number of glass tiles placed over every stall and described a recently erected cowshed along the whole length of the tiled roof of which there had been placed three rows deep of strong glass tiles; the lighting was thus exceptionally good and was distributed in every corner of the shed. Dr. Wilson was of opinion that where definite and adequate means of ventilation were provided 600 cubic feet of air space per cow was a reasonable amount to insist upon where the cows were turned out for a portion of each day and stated that regulations requiring this amount had been sanctioned for the burghs of Dufftown and Grantown by the Local Government Board for Scotland. A supply of clean and wholesome water, not only for consumption by the cows but for cleansing purposes, was insisted upon and after stating that the temperature of the water was the chief reason why the cows preferred water which the sun's rays have warmed in the open air, be it dirty or clean, to that drawn from a deep well, Dr. Wilson advised that a suitable receptacle might be kept filled in the open air so that warmed pure water might be provided for the cows. Every endeavour, he thought, should be made to bring home to the farmer or cowkeeper as the seller as well as to the public as the purchaser the knowledge that all the regulations for every part of the milk trade were based upon advice of those actually carrying on the trade and that the lodging of animals under conditions conducive to their health and well-being was just the condition with which the public and sanitary officials would be best satisfied. In the course of the discussion which followed the reading of the paper, several speakers urged the necessity for providing not only a sufficiency of air space but for securing that the air should be pure and deprecated the huge accumulations of manure which were so often found surrounding cowsheds in rural districts.—Dr. H. Meredith Richards and Dr. A. Newsholme advocated a bacterioscopic standard of milk and Dr. H. R. Kenwood insisted upon the thorough cleansing of the cows' teats and bellies.—Mr. C. B. Davies, a Cheshire farmer and the secretary of the Cheshire Chamber of Agriculture, who was present as a visitor, agreed with nearly all Dr. Wilson's proposals and spoke very strongly of the absolute necessity for providing an ample water-supply.

WIMBLEDON AND DISTRICT MEDICAL SOCIETY.—The annual clinical evening of this society was held on March 13th, Dr. S. R. Collier, the President, being in the chair.—The President showed—1. A specimen of Fœtus Papyraceus, one of a twin pregnancy, the other fœtus being normal; the causation of the condition was discussed. 2. The tube from a case of Ruptured Tubal Pregnancy. The patient was operated upon within six or seven hours of the onset of the acute symptoms. The rupture was found close to the uterine end of the tube. The patient was about six weeks pregnant. Recovery was uninterrupted.—Dr. J. E. Bates read notes on a case of Ectopic Gestation upon which he had operated at about the eighth month. A living fœtus was removed from a cyst above and to the right of the uterus. The fœtus survived a short time. The patient made a good recovery.—Mr. D. A. Bolilio read notes on a case of Acute Phlegmonous Cholecystitis simulating Acute Intestinal Obstruction.—Dr. J. E. C. Bradley read notes on a case of Perforating Gastric Ulcer. The patient had never presented any symptoms of gastric trouble until perforation occurred. Operation was performed and the patient made a good recovery.—Dr. J. Harvey read notes on a case of Patent Urachus and Pyonephrosis in an infant. The child lived five weeks. There was marked evidence of syphilis on the side of the father. The necropsy showed the urachus patent at the umbilicus and communicating with the apex of the bladder. Both kidneys were distended with pus. The bladder was greatly hypertrophied.—Dr. Bates suggested septic infection through the umbilicus by means of the patent urachus.—Mr. E. A. Purcell showed a case of Congenital Absence of both Patellæ in a girl aged 15 years. The condition gave the patient little or no inconvenience.—Dr. Martin Randall read notes on three cases of Perforated Appendicitis due in each case to concretion and showed the appendices which he had removed. All the patients recovered, though in one convalescence was retarded owing to the presence of a large abscess in connexion with the appendix. Ultimate recovery was good. Dr. Randall also showed some stones which he had removed by nephrotomy.—Mr. P. B. Spurgin read notes of, and showed the specimen from, a case of Spontaneous Rupture of the Heart. The patient was a woman, aged 70 years. On the day before death the patient suffered great thoracic pain and vomited greenish sour fluid at intervals. The skin became sallow and the urine was bile-stained. At the necropsy a large single gall-stone, weighing one ounce, was found in the gall-bladder. A ragged tear was found in the posterior wall of the left ventricle. All the internal organs were congested. The heart muscle and arteries showed marked signs of degeneration.—Mr. G. Walker read notes on a case of Agoraphobia.

Reviews and Notices of Books.

Nothnagel's Encyclopædia of Practical Medicine: Diseases of the Bronchi, Lungs, and Pleura. By Dr. FRIEDRICH A. HOFFMANN, Professor of Medicine in the University of Leipsic; Professor O. ROSENBACH, of the University of Breslau; and Dr. E. AUFRECHT, Chief of Clinical Medicine in the Magdeburg-Altstadt City Hospital. Edited with additions by Dr. J. W. MUSSER, Professor of Clinical Medicine in the University of Pennsylvania. Authorised translation from the German, under the editorial supervision of Dr. ALFRED STENGEL, Professor of Clinical Medicine in the University of Pennsylvania. Philadelphia and London: W. B. Saunders and Co. 1903. Pp. 1029. Price 21*s.* net.

THIS volume is divided into three sections, each containing an elaborate monograph on a special subject. The first is concerned with Diseases of the Bronchi and is written by Professor F. A. Hoffmann; the second deals with Inflammations of the Lungs, the author being Dr. E. Aufrecht; whilst the third is devoted to Diseases of the Pleura and is written by Professor O. Rosenbach. The editor, Professor J. W. Musser, has carried out his onerous duties in a most praiseworthy manner and has made additions to the text where necessary, so that the results of the most modern researches are included in the work.

Professor Hoffmann commences his account of the diseases of the bronchi with an excellent description of the anatomy and physiology of the bronchial tubes. The investigations of Professor Aeby have been hitherto accepted as the most accurate record of the course and distribution of the bronchi and Professor Hoffmann does not refute his statements. In the passages introduced by Professor Musser, however, the researches of Dr. G. S. Huntingdon are referred to, which show that certain of Professor Aeby's hypotheses are incorrect. Dr. J. M. Blake's observations on the same subject are also mentioned. This observer has performed useful service by working out with the aid of the Roentgen rays the relations of the trachea and bronchi to the thoracic walls. The account given by Professor Hoffmann of foreign bodies in the bronchi is most complete. Tables are inserted giving

abstracts of a large number of cases of this nature. The sex and age of the patients in each instance are stated, together with the nature and location of the foreign body, the symptoms that presented themselves, the treatment that was adopted, and the result. The source from which the information was obtained is also noted. This record forms very interesting reading and will prove very valuable material for reference. The statistics derived from these cases are also worthy of attention, more particularly when treatment is considered. It is shown that undoubtedly efforts should always be made to remove the foreign body. The "expectant treatment"—namely, to wait and to leave the course of events to nature—is not usually followed by satisfactory results. In considering the etiology of bronchitis some interesting remarks are made on "catching cold." Professor Hoffmann says: "The injurious influence of moist cold air when the temperature changes suddenly through several degrees and the change is accompanied by a strong wind is a matter of such universal experience that it must be accepted as a fact. The question is no longer whether cold can injure but in what manner it works the injury." He suggests that the action of cold in causing bronchitis is brought about by loosening of the epithelium of the bronchi, with the development of "small thin places" in the lining membrane. As a result, dust particles and micro-organisms penetrate into these thinner places and cause a desquamation of the superficial layers of the epithelial covering. The action of cold in causing inflammation of internal organs has been the subject of much discussion and the pathology of "catching cold" has not been definitely determined. Professor Hoffmann's theory is, in our opinion, not altogether convincing. We certainly think that an explanation is to be found by a reference to the relationship of the "seed and the soil"—that is to say, that chill brings about certain changes in the mucous lining of the bronchial tract which render it open to the attacks of micro-organisms which are otherwise unable to exert any malignant influence. But we doubt whether those changes consist of minute wounds of the epithelium. Unfortunately we are not able to offer an alternative theory; we are not aware whether any decisive investigations have been made as to the effect of vaso-motor changes in the mucous membrane in encouraging or otherwise bacterial growth. Professor Hoffmann's remarks on asthma are also worthy of attention. He finds some difficulty in defining what the term "asthma" really implies. After referring to the confusion which has arisen as to the exact pathological basis upon which asthma rests he finally says: "By asthma we understand a neurosis in the distribution of the respiratory nerves, which leads to attacks of dyspnœa, with a peculiar secretion and distension of the lungs." The author therefore inclines to the neurotic origin of asthma and follows the teaching of Leyden, Curschmann, and Fraenkel in insisting upon the production of a specific secretion as the essential symptom of the disease. He also speaks in no uncertain terms as to the treatment of asthma by operative procedures on the nose. Certain authorities have strongly advocated searching for "asthma points" in the nose and destroying them by means of the cautery and some amount of success has been obtained. He remarks: "It is certain that we must think of treating the nose, but it is equally certain that we must not expect too much from nasal treatment and that asthmatics may suffer, and have already suffered, much harm at the hands of too energetic nasal therapeutists. Much mischief can be done with the galvano-cautery." We believe that these words will be indorsed by most physicians. We can find in this article no reference to the treatment of asthma by compressed-air baths. This therapeutic measure has been productive of good results and should have found a place in such a good account of the disease as is here given. Professor Hoffmann likewise contributes some valuable remarks on emphysema and atelectasis. He gives the results of an exhaustive study which he has made as to the action of the muscles engaged in inspiration and expiration. He holds views which have not been generally accepted but which he explains with much clearness and force. In most text-books it is stated that the diaphragm can be depressed to such a point that the convexity is directed downward and that the diaphragm during contraction acts as an expiratory muscle. He believes this to be purely a theoretical conclusion and he goes so far as to say that life cannot continue if the diaphragm loses its power of acting as an inspiratory muscle. He supports his contentions by observations on numerous emphysematous subjects with the Roentgen rays and states that he has always found the dome of the diaphragm more or less distinctly flattened, but he has never seen a perfectly flat diaphragm, far less one with its convexity directed downwards. In connexion with this subject the Hunterian Lectures recently delivered by Dr. Arthur Keith before the Royal College of Surgeons of England and published in THE LANCET[1] are of interest. He shows how variable is the position of the diaphragm.

Dr. Aufrecht commences the section on Inflammations of the Lungs with an elaborate account of croupous pneumonia. He upholds the view that this disease is a general and not a local one, that the inflammation of the lung is only the principal symptom, and that the clinical phenomena cannot be explained by the local affection. In accordance with most modern authorities he maintains that croupous pneumonia belongs to the group of infectious diseases. An extended account is given of the investigations which have been made in regard to the bacteriology of the disease and the conclusion is arrived at that the pathogenic organism is the diplococcus discovered by Professor Fraenkel and Professor Weichselbaum. It is suggested by the editor that a clearer conception of pneumonia would be obtained if the changes in the lung were considered to be one of many manifestations of a pneumococcus infection. We agree that by adopting this view the clinical course, the complications, and the sequelæ would be more clearly understood. In his description of the treatment of pneumonia Dr. Aufrecht recommends measures which have not been generally adopted in this country and decries others which have been found to yield excellent results. Venesection he totally disapproves of; in certain cases, however, when the right side of the heart is embarrassed we believe that this measure may be adopted with great benefit to the patient. The treatment by large doses of tartar emetic, at one time so largely practised, he rightly condemns. He also comments at length on the use of digitalis and again expresses his opinion in no uncertain terms. He states that he no longer uses this drug in pneumonia "and would not even now be induced to use digitalis in the hospital, as especially in the last years I have been enabled to obtain very satisfactory results by less severe methods." As a routine treatment the use of digitalis is but rarely made use of, but when there are indications of cardiac failure it is a most valuable drug. Dr. Aufrecht's remarks on the use of stimulants in pneumonia are not convincing. He describes how some physicians have recommended certain quantities of "mild good red wine" and "wines of the South, Hungarian wine," but, strangely enough, he does not discuss the employment of brandy or whisky. Most English physicians are agreed that when there are evidences of cardiac failure stimulants (especially the spirits just mentioned) are amongst the most valuable means which we possess to combat this dangerous complication. Dr. Aufrecht states that according to his experience quinine, when properly administered, is the most suitable remedy in

[1] THE LANCET, March 7th (p. 631), and 14th (p. 709), 1903.

the treatment of pneumonia, and he maintains that its value is due less to its antipyretic action than to its specific action on the causes of the disease or their products. He prefers the neutral tannate of quinine to any other preparation. He also uses the hydrochloride subcutaneously. A very complete account is given of catarrhal pneumonia and the various views as regards the etiology and pathology of this condition are fully discussed. Dr. Aufrecht maintains that a catarrhal inflammation of the mucous membrane of the finest bronchi is an absolute condition upon which catarrhal pneumonia depends. If this view is upheld a new classification of the causes of this disease would be necessary. "Deglutition pneumonia" is usually included under this head, but in this process the turgescence of the bronchial vessels is not present and, therefore, according to Dr. Aufrecht, this form of pneumonia must be excluded as one of the varieties of catarrhal pneumonia. He also gives good descriptions of chronic pneumonia, syphilitic pneumonia, "pneumonokoniosis," carcinoma of the lung, embolism, thrombosis and infarct of the lung, and gangrene of the lung.

Professor Rosenbach's monograph on Diseases of the Pleura is not only scientific but also essentially practical. The remarks on the etiology of pleurisy show a thorough study of the work which has already been accomplished by various observers and also exhibit great skill in classifying and sifting the results of the many investigators which have been recorded in medical literature. One of the conclusions arrived at is that bacteriology has failed to explain the most important problems in the etiology of pleuritic effusion. "The presence of specific micro-organisms, streptococci and staphylococci of various forms, is not necessary for the conversion of a serous into a purulent exudate and the necessary conditions for the formation of pus are as much hidden from our knowledge to-day as are the various causes of inflammation of the pleura." It is shown, however, that inflammation of the pleura is usually due to the tubercle bacillus, to the diplococcus lanceolatus, or to the streptococcus, but there are also other organisms which may cause the lesion, and mixed infections are not uncommon. The frequency with which so-called "simple pleurisy" ultimately proves to be of a tuberculous nature is now generally acknowledged. The symptomatology of pleurisy is fully and clearly described, due stress being laid on the various types of breath sounds which may be heard over pleural effusions and which so frequently give rise to doubts in diagnosis. The remarks on treatment will also repay study.

Taking the volume as a whole we regard it as a most excellent and valuable publication and one well worthy of the distinguished physicians whose names are connected with it.

The Practical Details of Cataract Extraction. By H. HERBERT, F.R.C.S. Eng., Major I.M.S., Professor of Ophthalmic Medicine and Surgery, Grant Medical College; in charge of the Sir Cowasjee Jehangir Ophthalmic Hospital, Bombay. London: Baillière, Tindall, and Cox. 1903. Pp viii. and 109, with four plates. Crown 8vo. Price 4*s.* net.

No surgeons are better qualified to speak with authority on the subject of cataract than those who practise in India. The number of cases on which they operate is prodigious and the success which they obtain is remarkable. What European surgeon could speak with the experience that has fallen to the lot of Major Herbert, derived from 1484 extractions performed in less than two years! and who could, like him, furnish statistics of 497 extractions completely exempt from grave infection? It is natural that the minutest details of these proceedings should be carefully considered. No doubt the spare habit of body, the simple diet, and the absence of constitutional taint are points in favour of the Indian native as compared with the ordinary inhabitant of London or of one of our large towns, but these circumstances will scarcely explain the difference that unquestionably exists in results. It is remarkable that whilst great attention is paid in India to the topical purification of the eyes the surroundings are comparatively neglected. Major Herbert informs us that at the Sir Cowasjee Jehangir Hospital there is no operating theatre. "The operations are performed in a room just cleared of the daily crowd of out-patients. The windows of the room are widely open." "The patients themselves are far from clean, and no extraordinary effort is made on admission to clean even their eyelids, which may never have known the application of soap." "Our attention is concentrated upon the conjunctiva and upon abnormal secretion from the Meibomian glands, or rarely from the lacrymal sac, as the sole sources of the infective bacteria that may, in a fairly well-guarded and correctly performed operation, possibly find their way into the wound." To destroy these the conjunctival sac is thoroughly washed out with perchloride of mercury lotion containing one part of perchloride in 3000 parts of water. Cocaine is employed as an anæsthetic; the instruments in common use are carefully rendered aseptic and all with the exception of the knife are passed through the flame of a spirit lamp. As a preliminary measure the eyelids are squeezed together with their conjunctival surfaces in contact and any Meibomian secretion that exudes is removed by an assistant with lint dipped in perchloride. An unusual recommendation is that after the insertion of the speculum the outer eyelashes of the upper lid beyond the blade of the speculum should be cut off with scissors. Major Herbert's reason for this is that it is impossible to sterilise either them or the margins of the lid and that there is danger if the blade of the knife, the forceps, cystotome, or vectis be allowed to come into contact with them. The details of the operation for extraction as given by Major Herbert do not differ in essentials from those in common use in this country. He seems to have in general practised the operation termed extraction with iridectomy, believing that the preservation of a round pupil is a gain too slight to justify any large risks or sacrifices. In the "after treatment" little is done except to apply a bandage for five days, taking care to remove it daily and to cleanse the lids from any secretion that may have accumulated. Major Herbert's work, although contained in brief compass, is deserving of study and may be read with advantage by every operator. It is the result of much careful observation and the account given is not encumbered with unnecessary detail.

LIBRARY TABLE.

The Sanitary Inspector's Guide. By HENRY LEMMOIN-CANNON. London: P. S. King and Son. 1902. Pp. 257. Price 3*s.* 6*d.*—This is a very helpful treatise for the sanitary inspector, for it affords him not only a knowledge of the numerous sections of the Public Health Acts but will assist him to understand the extent and meaning of the sections. It is, in fact, the kind of book which the sanitary inspector would do well to make his friend.

Practical Methods of Urine Analysis. For Chemists and Druggists. Second and enlarged edition. London: The Offices of the *Chemist and Druggist*. 1902. Pp. 88. Price 2*s.* 6*d.*—This edition is a decided advance on the first edition (*vide* THE LANCET, June 3rd, 1899, p. 1498) so that the book now forms an excellent little guide on the subject of urine analysis, care having been taken to include just those methods which give trustworthy results and which are an aid to medical diagnosis. Urine analysis, however, seems to us in the wrong place in the hands of the druggists, although, of course, the druggist is an educated man who

must necessarily have a knowledge of chemical analysis. The view of the writer is that "no class of men is better fitted to fill this office than are pharmacists." Of course, the pharmacist is nearer at hand, as a rule, than the analyst, but the office is clearly more within the province of the latter than of the former. We wonder whether pharmacists have studied the cryoscopic method of examining urine; it is not referred to in this book.

The Purin Bodies of Food Stuffs: their Estimation, Action, and Significance. By I. WALKER HALL, M.D., Assistant Lecturer and Demonstrator in Pathology, the Owens College. Manchester: Sherratt and Hughes. 1902. Pp. 108. Price 2*s.*—This *brochure* forms the subject of an interesting investigation upon the estimation of the purin bodies and the study of their specific effects upon the metabolic processes. Of the known purin bodies hypoxanthin, xanthin, adenin, guanin, and caffeine and theobromine are found in foodstuffs and uric acid and traces of xanthins and methyl xanthins are met with in the urine. The author has worked out a trustworthy process for their estimation and he finds considerable quantities of purin bodies in meat and in certain vegetable foods and in beer and porter, their presence perhaps accounting for the harmful influence of malt liquors in gout. The importance of determining endogenous purins in many diseases, either by the use of purin-free food or by the aid of tables giving the percentages of purins in foodstuffs, is emphasised. To help in this direction an instrument known as the purinometer is proposed. There is no doubt that the purin bodies exert a marked influence upon metabolism. The author has contributed a very important and interesting essay on the subject.

Notes on Essential Oils. By T. H. W. IDRIS, F.C.S. Second edition. London: Idris and Co. Pp. 234.—In dealing with the first edition of this little volume we remarked how useful it was to possess in handy form a volume devoted exclusively to the composition and chemical and physical constants of the essential oils. The book is obviously valuable for reference on the subject, saving much time in searching through large works on chemistry in which the information required is commonly widely scattered.

Wireless Telegraphy: a Popular Exposition. By G. W. DE TUNZELMANN, B.Sc. London: The Office of *Knowledge*. 1902. Pp. 104. Price 1*s.* 6*d.*—Wireless telegraphy is very much in evidence now and the author of this little work has done a service in presenting the subject in a popular style. The chapters are based upon a series of papers on wireless telegraphy which were published in *Knowledge* in 1900. But even since that time it has advanced and not many days ago the newspapers were full of Marconi's latest achievement across the Atlantic. The author deals with the historical development in the practical working of electric telegraphy and his account is most interesting and his illustrations are clear. There is no doubt that in a short time the present methods will undergo rapid development until the system will be perfected for common usage. Meantime an excellent idea of the situation as it now stands is to be gained from a study of this little book.

Food and Drugs. By CHARLES JAMES HIGGINSON, of the Inner Temple, Barrister-at-Law. Second edition, revised and enlarged. London: Effingham Wilson. 1902. Pp. 203. Price 3*s.* 6*d.*—This is a handy book of reference on the laws relating to the adulteration of foods and drugs and as to the construction put upon those laws according to the decisions given in certain cases. The present edition contains in the appendix the regulations of the Board of Agriculture as regards water in milk and skimmed and separated milk. We hope soon that the author will be able to add in a new edition regulations in regard to the control of water in butter as well as to restrictions as to the use of preservatives in food. The book helps analysts, solicitors, and other professional men to be conversant with the legal aspect of cases of adulteration.

Practical Sanitary Engineering. By FRANCIS WOOD, A.M.Inst.C.E., F.G.S. With numerous illustrations. London: Charles Griffin and Co., Limited. 1902. Pp. 304. Price 8*s.* 6*d.*—This is an eminently practical work dealing with that branch of sanitation which is of first importance—namely, the construction and maintenance of sewers and drains. The author is at his best when dealing with structural details though he shows a sound acquaintance with the modern methods of sewage disposal. Sanitary engineering is a rapidly developing science, opening a wide field for study and inviting special attention to the application of scientific principles. This work is written with an evident attempt to bring the many aspects of the science within the purview of a manual and such a collection of facts and material is of obvious utility to those studying the subject. It should find interested readers amongst medical officers of health, engineering students, and sanitary inspectors.

HOSPITAL MAGAZINES.

Charing Cross Hospital Gazette for February quotes from THE LANCET of March 26th, 1836, an account of an indictment at Lincoln Assizes for body stealing, being the first conviction which took place under the Anatomy Act of 1832. *Apropos* of this subject, the following epitaph from a tombstone in a New Hampshire graveyard appears in the columns of an American contemporary:—

> Ruth Sprague, dau. of Gibson and Elizabeth Sprague. Died Jan. 11, 1816, aged 9 years 1 mo. 3 days.
> She was stolen from the grave by Rodrick R. Clow and dissected at Dr. P. M. Armstrong's Office in Hoosick Falls from which place her mutilated remains were obtained and deposited here.
>
> Her body dissected by fiendish men,
> Her bones anatomized,
> Her soul we trust has risen to God,
> A place where few physicians rise.

St. George's Hospital Gazette for February contains quotations from various authors addressed to members of the staff of the hospital and others as valentines. The winner of the King's Sanatorium Prize is hailed as follows:—

> "Ye come from Arthur .....
> Victor his men report him."

Belgravia is rallied upon its grudging pecuniary support of the institution in Shakespeare's words:—

> "Money by me? Heart and goodwill you might,
> But surely, master, not a rag of money."

Dr. Norman G. Bennett contributes a paper on the Causes and Consequences of Oral Sepsis. He incidentally remarks that "the neglect of children's teeth, especially among the poorer classes, is so seriously detrimental to the proper nutrition of the child at an important age as to be a matter of national importance as affecting the physique of the race."

Middlesex Hospital Journal for February publishes the report of a paper read before the medical society of the hospital by Dr. Voelcker entitled, "Peeps into old Pages." Dr. Voelcker has made himself familiar with Joannes Baptista Porta's Phytognomonica, Vesalius's Anatomy, a work on Surgery edited by le Clerc and Mangetus and published in 1685, and the Armamentarium of Scultetus. From these and other writers of bygone times Dr. Voelcker extracts amusement and instruction. A double-page sheet of illustrations accompanies the paper; a drawing of microorganisms from Leeuwenhoek's Arcana Naturæ is particularly interesting. "Moments in a Military Riding School" is an amusing description of the author's experiences when seated for the first time on what he calls the "giddy altitude of a horse's back."

St. Thomas's Hospital Gazette for February contains a brief note on Egyptian Midwifery illustrated by a picture representing an Egyptian woman on a midwifery chair with

an Egyptian midwife sitting in an expectant attitude before the supposed patient. We say "supposed" because, as the author of the note points out, it is obvious that the woman is not in labour neither is she quite in the correct position. Examples of the amusing and curious letters that reach the hospital from time to time are given in this number of the *Gazette*. One correspondent wishes to know whether the hospital has the necessary appliances for testing the specific gravity of a child. The correspondent's reason for asking this question is that the child is about to be put upon a "mixed (meat, &c.)" diet after having been brought up as a "*strict* vegetarian."

Westminster Hospital Gazette for February.—In this issue, which seems to have been produced under a new editor, there is an amusing parody on the "House that Jack Built" which has for its theme a certain state of things relating to the office of coroner and medical men. We regret to see the pages of this magazine disfigured by the use of an epithet usually applied to Ananias. That the word is indorsed by the editor is evident from the fact that in one place it appears with the letters (Ed.) placed after it.

Manchester Medical Students' Gazette for March.—The most interesting paper in this issue is "Days of My Youth," by Dr. Frederick Melland, who gives reminiscences dating from the coronation of George IV. Speaking of the surgery of the medical man to whom he was apprenticed Dr. Melland says: "Our surgery with its multitudinous array of drawers, jars, and bottles (large and small) had served several generations of surgeons, and contained medicines that had not been used for at least 150 years, such as prepared bear-lice, amber, crab's eyes, coral, robs or the inspissated juice of different fruits and herbs."

New Inventions.

A PURE ENAMEL FOR BATHS FOR MEDICAL AND DOMESTIC USE, AND FOR SINKS, URINALS, OR VESSELS LIABLE TO CONTAIN CORROSIVE FLUIDS.

IT must be admitted that a pure white enamel for baths for medical and domestic use, hospital sinks, &c., is a desideratum and many attempts have been made to produce such an article which would supplant expensive porcelain. We have recently examined a number of model iron baths and basins submitted to us by, and enamelled by the process of, the Pure Enamel Bath Co., Limited, of the Imperial Works, Bromley-by-Bow, E., and we are bound to say that as far as our experiments have gone the results are very satisfactory. It is well known that hitherto there has been great difficulty in making a glaze which will not "craze" or crack and which at the same time will resist the action of certain medicated fluids that are extensively employed in special balneological practice. Certain strong saline natural mineral waters, for example, have sooner or later a powerful action upon the ordinary enamels in use. The knowledge of these facts has suggested the institution of a series of experiments upon the new enamel with such agents dissolved in water as corrosive sublimate, carbolic acid, iodine, sulphuretted hydrogen, sulphurous acid, calcium chloride, carbonate of soda, common salt, salts of iron, and a mixture of bicarbonate of soda and hydrochloric acid, which forms the artificial Nauheim bath. Experiments on these lines were ultimately made and with the single exception of sulphurous acid no action upon the surface of the enamel was exhibited, and in this case the acid was in decided excess. With iron salts rust readily deposited upon the enamel which, however, was completely removed by rubbing with moist silver sand without injury to the glaze. In the Nauheim bath it is important to use the bicarbonate of soda in excess, as otherwise the acid is likely to have a corrosive effect upon the enamel. When tablets were used for the production of an effervescent bath there was no action upon the glaze. A so-called sulphur bath (H_2S) had no effect whatever upon the enamel; it preserved a pure white shining surface. It is obvious from this satisfactory result that the enamel is free from lead, as otherwise it would sooner or later show signs of blackening. As a matter of fact, the glaze is entirely free from poisonous metals, and it is important to add that the process of glazing thus involves no injury to the health of the operatives and therefore special regulations which apply to those working with lead glazes have no application. Soap or washing soda is without the slightest deteriorating effect upon the enamel and therefore it is calculated to withstand all domestic usage. Carbolic acid and mercuric chloride are also without any visible effect. Throughout the experiments no sign of "crazing" was observed. The enamel, in fact, does not readily chip owing to the way in which it is welded to the iron. The process of welding the enamel involves a great heat, so that the iron approaches its softening point—the enamel so to speak enters into the iron and the iron into the enamel. Sections of the iron show that this is so—it does not seem possible to detach the enamel or to splinter it; it is practically indestructible.

We are informed that ordinary domestic iron baths may be enamelled by this process within a few hours, so that not more than two days need elapse from the time the bath has been taken away from the house to the time it is returned, finished with a white and brilliant glaze. The method seems to be applicable to a very large number of useful and sanitary purposes. The soap tray of the bath may be of cast iron enamelled white by this process, so that it is not distinguishable from solid porcelain, and the tray is so formed and attached, as shown in the accompanying illustration, as to allow of the parts being kept thoroughly

clean and to obviate the accumulation of the soapy matter which is often a source of trouble and unsightliness. In special cases the pure white enamel may be replaced by an exactly similar process with an enamel of a pea-green tinge which, according to our experiments, is proof against either concentrated boiling acids or alkalies. We found that not the slightest action was evidenced when even concentrated sulphuric acid or caustic soda was boiled in vessels prepared with this greenish enamel. It is therefore acid- and alkali-proof. Fresh urine as well as urine in a state of decomposition also had no effect upon it. Moreover, the enamel appeared to be proof against "crazing." The unenamelled face of a piece of cast iron was attacked by sulphuric acid but the enamelled side was not acted upon. It would therefore appear that this acid- and alkali-proof glaze will be of great value for sanitary ware; the sinks in operating theatres, for example, urinals, flushing pans, wash-basins, and, in fact, an infinite number of applications are suggested in which a receptacle with an acid- or alkali-proof surface is required. The appearance of the white enamel is quite brilliant and equal to highly glazed porcelain, while the greenish enamel has the same brilliance but from the point of view merely of appearance it is slightly inferior. Its property, however, of resisting the action of the corrosive fluids mentioned is certainly remarkable.

THE LANCET.

LONDON: SATURDAY, MARCH 28, 1903.

The Medical Man, the Coroner, and the Pathologist.

WE publish in another column a paper by Dr. H. H. LITTLEJOHN, which criticises the system under which inquests are held and discusses at some length the question of the efficient performance of post-mortem examinations made by order of the coroner. No one contends that the inquiries antecedent to the holding of an inquest are made by such persons or in such a manner as to insure the holding of inquests in all cases where inquests are ordered by the law; and the majority of our readers will assent to the proposition that the cause of death should always be established by a medical man before the burial of the body is permitted. We hold the view that a post-mortem examination should be made in all cases where doubt exists which cannot otherwise be resolved, but we are not in accord with Dr. LITTLEJOHN when he discusses the competency of medical practitioners in general to conduct the necropsies which the coroner may deem it necessary to order. The writer's position and experience give weight to his opinions and being anxious to see all the aspects of the question ventilated we have pleasure in affording to his paper the hospitality of our columns. We are not, however, able to accept as matters of universal experience, in England at any rate, all the facts with which his individual observation has supplied him and from which he draws his conclusions.

The views which we have ourselves expressed upon the provisions of the Coroners Act of 1887 for the calling of medical witnesses and the holding of post-mortem examinations for the purposes of that Act do not imply any opinion on our part that the sections in question are perfect or that they might not after due consideration be improved. We have, however, pointed out what those sections lay down and have urged that any alteration in the practice prescribed should be brought about by Act of Parliament, after discussion in both Houses and after the advice of the leading members of the medical profession has been heard, and that radical changes should not be made by coroners or by local bodies influencing the action of coroners. The action of individual coroners, some of whom are medical men and some of whom are lawyers, and all of whom are subject to the influence of their own opinions, cannot produce the certainty and consistency which are to be desired in such matters. Under the existing law provision is made in terms which we need not repeat for the making of post-mortem examinations by local medical men who in ordinary circumstances will be general practitioners admittedly of varying qualifications and ability. Provision is also made for the obtaining of further expert assistance should the cause of death appear not to have been ascertained fully by those primarily ordered to be employed. Dr. LITTLEJOHN appears to consider that the incapacity of general medical practitioners as a body is such that they should never be intrusted by coroners with post-mortem examinations, and we lay his statements of fact with his deductions before our readers. Like ourselves they may fail to recognise as typical of the medical practitioner "an excellent physician" who "has never made a post mortem in his life," and may question the accuracy of the assertion that "very few" students when they obtain their qualification "have personally performed a post-mortem examination." With regard to this, moreover, we submit that if medical men having obtained their right to enrolment upon the Medical Register are not qualified to make ordinary post-mortem examinations with efficiency a defect has been exposed in the course of training adopted in medical schools which is not beyond remedy and which should be made good.

In the course of his paper it will be observed that Dr. LITTLEJOHN gives instances of actual necropsies and their results. Some of these support the propositions with which for the moment he is dealing but hardly lend force to others of which he treats elsewhere. We may be, for example, in accord with him when he says that "the external inspection of a body can seldom give a true indication of the cause of death in cases where persons are found dead"; but we should hardly select the case which he cites of carbolic acid poisoning to support the contention that a specially qualified and appointed pathologist is necessary in order that post-mortem examinations may be efficiently held. In such instances as these the coroner would fail in his duty if he neglected to hold an inquest and thus to establish the cause of death, and the nearest medical practitioner would deserve all that Dr. LITTLEJOHN says of him if he failed to supply the necessary information after making the examination intrusted to him. If in cases so simple, or in others of greater complexity, the medical man does not express himself with certainty before the coroner's jury it is for the jury to ask for further assistance. We are not aware that medical men are in the habit of expressing themselves as sure when they are not sure or when they have no good cause to be sure, and we do not admit, as Dr. LITTLEJOHN would have us do, that "the majority of medical men engaged in general practice are not fitted to conduct medico-legal post-mortem examinations." We admit, however, on the one hand, that in certain cases an expert is necessary, while on the other we maintain that in the great majority of cases which come under the notice of the coroner the medical practitioner who attended the deceased during life is the one who should perform the necropsy. His knowledge of the previous history of the case will lead him especially to investigate certain points which an expert not possessing a full acquaintance with the clinical features observed during life might pass over. We see no analogy between this and the patent absurdity suggested by Dr. LITTLEJOHN as a parallel—namely, "that the physician who attends a patient during the onset of an attack of appendicitis is the best

person to operate when surgical interference becomes necessary." The whole matter is one which deserves full discussion and the careful consideration of the facts and arguments put forward on both sides. For this reason we welcome Dr. LITTLEJOHN'S able exposition of views from which we differ.

The Recent Debates on the Navy and Army Estimates.

THE attention of the House of Commons and of the country has been much absorbed of late with naval and military matters in general and with the navy and army estimates in particular. The national expenditure has reached enormous dimensions, as everybody knows, and it is to be feared that so long as foreign Governments show no signs of exhaustion but are pressing forward in these directions so long shall we be compelled for the security of this Empire to do the same. What we have to look forward to in the future is, let us hope, the realisation of a strong Empire every part of which is organised to take care of itself. All political parties are agreed on the supreme necessity of keeping up a large, preponderating, and highly efficient navy and are prepared to vote ungrudgingly any sum of money that may be necessary for this purpose. The nation seems to be generally satisfied, on the whole, with the way in which the money is spent in this direction, with the system of training of the officers and men, and with what is being done towards still further developing the efficiency of the senior service. With the army, however, the case is different. Although we do not believe that there is in reality an unwillingness on the part of the nation to bear any financial burden that can be shown to be absolutely necessary, many people seem doubtful, amid so many conflicting views, whether the measures proposed to be taken by the Government are the wisest and best that can be devised. Happily these are matters, in their broad conception, for the consideration of statesmen and quite outside the province of a medical journal. There are points, however, which invite the attention of THE LANCET.

The debates in Parliament during the present month started on a motion relating to the training of officers and men. Mr. BRODRICK, in reply to Colonel LONG and Mr. LEE, gave a sketch of his new system for the entrance and training of officers for the army. Recourse will still be had to the channels through which these have been hitherto supplied—namely, the usual competitive examinations, the militia, and the universities—but the present system will undergo some radical modifications. An Advisory Board is to be constituted which is to say the final word in regard to military examinations and some entirely fresh proposals are made with the object of attracting a largely increased number of university candidates into the army. We have nothing to say against the appointment of a director-general of military education or as to the representatives who are to constitute the proposed Advisory Board. But Mr. BRODRICK seems to be quite enamoured with the idea of examination being an effective test and with a system of doing things by councils, committees, and advisory boards. Everything connected with army administration is apparently to be carried out in future through their instrumentality and little or nothing is to be left to the responsibility of heads of departments. It would seem to us that this almost exclusive method of transacting public business is rather a sign of official weakness than an indication of strength and directness of aim and purpose. While we recognise that, as regards the Army Medical Service, for example, an advisory board strengthens the hands of the Director-General rather than otherwise, Mr. BRODRICK appears to intend that the functions of the Advisory Board should leave little, if anything, to be done by the responsible head of the Army Medical Service.

The proposals for raising the educational standard with a view to improve the quality of those seeking to serve in the commissioned ranks of the army form a large and difficult subject. As regards university candidates the proposals strike us as excellent in their way. We question, however, whether these proposals, including the taking of an honours degree in military subjects, will practically prove largely successful in attracting university graduates. The intention is, we presume, that the army is henceforth to be taken seriously as a profession like any other profession, but no prospect is held out for any increase in the present rate of an officer's pay. The army, consequently, as a career can only prove attractive to those who have a decided taste for military life and adventure and are possessed independent means. To all such it will, no doubt, always hold out great attractions, as it has done in the past. But whether it can be made to offer inducements to the man who is before all things a scholar we feel doubtful. And with such candidates for commissions the passing of a medical examination may occasionally introduce a difficulty which will have to be carefully provided against. A course of hard reading for an examination does not always prove conducive to good health or perfect eyesight And although it goes without saying that intellectual training counts for much in the army as elsewhere, it is not everything. In the making of great and successful generals there is a rare combination of qualities —of character, courage, and temperament, as well as of mind and knowledge; great generals are usually born not made.

With regard to the men forming the rank and file of the army it is contended that with the present arms and modern modes of warfare the soldier is called upon to exercise his judgment and intelligence far more than he was in the past or under military systems of automatic training, such as have more or less obtained since the days of FREDERICK THE GREAT. Hence we want to improve the quality of the men who enlist and here we have a chronic difficulty. There cannot be an army without soldiers any more than a river without water, and how the desired number of recruits of the requisite standard of health and physique for soldiers is to be obtained is puzzling all military experts who recognise the difficulties of conscription in this country. We have only to take note of the large number of recruits rejected on medical inspection and of the number of would-be soldiers who are prematurely discharged as medically unfit for the service—a fact to which attention was recently called in the House of Lords—to see that there is something radically wrong

in regard to the feeding, housing, physical training, and personal hygiene of the classes whence they spring. We have already dwelt, however, upon this aspect of the case in connexion with what General Sir FREDERICK MAURICE has written thereon and there is no need to discuss it again. We do not, as our readers know, think that the Government adopts the best means or makes the best use of available methods for improving recruiting. The most powerful incentives to enlistment, except in time of war, are, we regret to say, want of food and want of work. Once in the army it is marvellous what brave, good, unselfish men our soldiers show themselves. After all is said and done, it must be remembered that the regulars did the hard marching and the hard fighting of the late war in South Africa. We have no sympathy whatever with those who seek to belittle them, their work, or the sacrifices which they are called upon to make—and always do make—nobly and cheerfully.

Rex v. Klosowski.

ON March 19th SEVERINO KLOSOWSKI, alias GEORGE CHAPMAN, was after a four days' trial convicted and sentenced to death at the Central Criminal Court for feloniously killing MAUDE MARSH, a young woman with whom he had cohabited. The history of the particular crime and its associated circumstances render it one of considerable interest whether considered in its medico-legal or purely forensic aspects. KLOSOWSKI came to England in 1888. He married a Polish woman whom he afterwards left. In 1895 he induced a young woman named ANNIE CHAPMAN to live with him; her he abandoned after betrayal. Probably it was his liaison with CHAPMAN that led him to assume her name, by which he was known until the case of MAUDE MARSH came to be investigated. In 1897 he resided at Hastings with a married woman named ISABELLA SPINK who passed as his wife. In 1898 SPINK died. Whilst at Hastings KLOSOWSKI purchased from a druggist an ounce of tartar emetic. The label of the packet was found at the prisoner's house after the death of MAUDE MARSH. After SPINK'S death he was supposed to have gone through a form of marriage with BESSIE TAYLOR. She, too, sickened and died. It is noteworthy that the symptoms exhibited by SPINK and TAYLOR were of practically the same character, but poisoning was not suspected, for the death in one case was certified as phthisis whilst in the other obstruction of the bowels was assigned as the cause. The certificates clearly referred to the predominant or ultimate symptoms—persistent vomiting and exhaustion.

In February, 1901, BESSIE TAYLOR was attended in her fatal illness by Mr. J. M. STOKER. Rendered callous, no doubt, by his previous fortune in escaping detection, KLOSOWSKI called in Mr. STOKER to minister to his last victim, MAUDE MARSH. It is not necessary to narrate the tortuous record of the murderer. He was proved to have compassed the deaths of three women by chronic antimonial poisoning. He abandoned his own wife, ruined the life of one of his paramours, and when tardy justice overtook him at last was seeking to possess himself of yet another woman. Counsel for the defence pleaded the absence of probable motive, but this was effectively met by the Solicitor-General who pointed to the one dominating feature of KLOSOWSKI'S character, "cruel, pitiless lust." It is not too much of a refinement to assert that although lust was the prime agent in directing his actions the prisoner was probably endowed with a peculiar form of perverted sexualism, for even if his unbridled passion may have driven him to sore straits a further explanation is required to account for his ruthless sacrifice of human life. Intellectually, no doubt, he was sane, but morally, in a partial degree, he must be accounted so far removed from the base-line of sanity as to verge on alienism. We do not for one moment argue criminal irresponsibility in his case, for this would carry us far beyond what is warranted either by empiricism or experience on medical grounds, whilst it would be subversive of justice. As the law exists death is the only fitting requital for such merciless deeds. Apart from considerations of KLOSOWSKI'S mental and moral state the most interesting feature of the terrible story from a medico-legal point of view was the condition in which the body of one of his alleged previous victims was found. Although it had lain in the grave for something like four years it was preserved from decomposition in a marvellous degree. This, of course, was attributable to the effects of antimony. A similar state of the organs was found in the case of ANN PALMER, the wife of the Rugeley murderer. Here after 15 months' interment antimony was detected even in the ovaries and uterine walls. Anyone would think that from the considerable knowledge of the properties of drugs possessed by KLOSOWSKI he would have lived in mortal dread that his sins—if he had any consciousness of the quality of sin—though hidden in the grave, were being kept for his undoing by the very agent which he had used to destroy life.

We must take exception to some criticisms upon the medical profession passed by Mr. Justice GRANTHAM who tried the case under consideration. It is not the first time that Sir WILLIAM GRANTHAM has delivered himself of uncomplimentary opinions of the medical profession. No doubt his legal mind was disquieted by the fact that antimonial poisoning may be so easily mistaken for natural disease. It does seem strange at first sight that the result of the action of antimony on the animal system should so closely simulate the evidence of natural illness that even a skilled observer may not have his suspicions aroused, but so it is. Moreover, a medical man does not approach his patient in the guise of a criminal detective. This is not the first occasion on which several people have died at short intervals from antimonial poisoning without the fact having been brought to light save after a protracted period and then, so to speak, only by an accidental occurrence which pointed to certain possibilities. In REG. *v.* WINSLOW, tried at the Liverpool autumn assizes in 1860, it appeared that three members of a family had died and had been buried in suspicious circumstances. On exhumation antimony in small quantities was found in their bodies, but scientific evidence was not prepared to vouch that the antimony caused death. The symptoms of a disease are not seldom anomalous and those induced by antimonial poisoning may vary considerably. In THE LANCET of May 22nd, 1847, p. 535, is recorded a case where a young man swallowed two drachms

of tartar emetic in mistake for Epsom salts. Half an hour later he vomited once. Mustard was required to bring on emesis and gradually the symptoms abated and the patient recovered. In the case of poisons producing such capricious results it must be very difficult to detect their use with certainty. One remark made by Mr. Justice GRANTHAM was timely in view of the report of the committee appointed to consider and to draft regulations for officially permitted cremation.[1] Had the bodies of ISABELLA SPINK and BESSIE TAYLOR been cremated the real cause of death and KLOSOWSKI'S participation in it would never have been revealed. It is questionable, however, if those bodies would have been reduced to ashes had the safeguards now recommended been in force and of these safeguards Mr. Justice GRANTHAM appears to be in ignorance. We propose to deal more exhaustively with this question at an early date.

We cannot close this notice without expressing our congratulations to Dr. T. STEVENSON on having accomplished a masterpiece of toxicological investigation and to the medical men through whose instrumentality the murders came to light.

Annotations.

"Ne quid nimis."

A NATIONAL TRAINING SCHOOL FOR MIDWIVES.

IN a letter to the *Times* of March 17th, signed by Lady George Hamilton and Miss Gregory, a proposal is made to establish a general hospital with a maternity annexe in one of the densely populated outlying districts of London as a national training school for midwives. In this institution, it is suggested, educated gentlewomen should receive an eighteen months' course of instruction in general and monthly nursing and then a six months' course of midwifery in the hospital and district. Having passed their examinations they would be drafted out as midwives to wherever they might be required, and they would return to the hospital every third year for re-instruction and re-examination. The scheme is put forward because, as the writers of the letter contend, the country has, in virtue of the Midwives Act, "undertaken to remove by degrees a highly responsible and scientific profession from the hands of uneducated women." They do not think that the country should rest satisfied in returning the work to the same class of women after they have received a minimum of training. We are in entire agreement with the view that midwives should receive some training in general nursing besides the special training which they receive in lying-in hospitals, and we hope that the new Midwives Board may find it possible to lay stress upon this point. It is also important that no difficulties should be placed in the way of any women who may intend to become midwives under the new Act obtaining the necessary instruction and training under the best conditions. It is possible that the present lying-in hospitals and training schools may not be able to deal adequately with the increasing number of persons who may be expected under the new Act to enter for a course of training as midwives. It is, however, of importance that this should be clearly shown before any measures to add to the already excessive number of small hospitals in London are carried out or, indeed, initiated. We must confess to some doubts as to whether any great number of educated gentlewomen will be found to take up an occupation which, in existing circumstances, must be but poorly paid and in which there are but few opportunities of their reaching such positions as are open to the ordinary general nurse. It would be little short of a calamity if the scheme led to the formation of a class of superior midwives who would tend to enter into competition with the medical men in the poorer districts and who would be inclined in view of their better and no doubt more expensive training to charge fees approaching those charged by duly qualified medical practitioners. With the object of the two signatories of the letter in their endeavour to improve the training of midwives we are in entire sympathy, and if educated gentlewomen can be persuaded to take up the occupation so much the better for all concerned; but if the scheme is to lead to the formation of a class of nurses who will consider themselves something more than ordinary midwives, and who must be something considerably less than duly qualified medical practitioners, then it cannot fail to do harm. It would be interesting to hear what in the opinion of Lady George Hamilton and Miss Gregory is "an adequate fee for adequate attendance" which they say the majority "of those requiring the services of midwives who are not paupers but the wives of self-respecting artisans and labourers are thankful to pay." By all means let us strive to improve the status of the midwife, but let us always remember that the most highly trained midwife must be immeasurably inferior in her amount of knowledge to the qualified medical man. It is to be hoped if any such scheme is adopted that it will be carried out with the consent of the council of King Edward's Hospital Fund for London and with the concurrence and advice of the new Midwives Board.

[1] See THE LANCET, March 17th, p. 673.

SIR E. CASSEL'S GIFT FOR THE RELIEF OF OPHTHALMIA IN EGYPT.

As has already been announced in our columns, a meeting was held recently at the office of the Egyptian Sanitary Administration at Cairo to consider the question of the disposal of Sir Ernest Cassel's gift of £40,000 for the relief of ophthalmia in Egypt. At this meeting a scheme was formulated by Sir Horace Pinching, the head of the department, for the institution of an "Ambulatory Dispensary." It is understood that the annual income from Sir Ernest Cassel's splendid gift will be about £1760. With this money Sir Horace Pinching proposes to create an additional post of inspector and to engage an officer for a short term of three years or so to give special attention to diseases of the eye and to travel round the provinces with a tent, so that the patients would not have to travel any distance to be treated. The inspector is to work for two months in the provinces and then to be for one month in Cairo, alternating his systematic visits to the provinces with a sojourn in the capital. Sir Horace Pinching's scheme is only tentative; it will require the sanction of Lord Cromer and, we presume, the approval of Sir Ernest Cassel before it is put into action. We think, therefore, that it will be well to state now that serious objections have been formulated to the scheme. A letter, a copy of which has been sent to us, has been addressed to Sir Ernest Cassel from a prominent member of the medical profession who considers that the scheme is a practically useless one and who gives his reasons for his critical attitude. "All they propose doing," he says, speaking of the sanitary administration, "is to purchase and equip one tent which, with its maintenance and salaries, leaves a wide margin on the interest derived from the sum. It is to work solely in the provinces and not to touch the towns. The tent of itself is sufficient to nullify utterly any possibility of good result, as it is a most unsuitable erection only justifiable in the stress of war, and any research work or other work of value is quite impossible in it." We doubt whether this criticism is wholly accurate, as the

writer has apparently overlooked the fact that the inspector is to be for one month in Cairo and for two months on tour in the provinces. Whether he is to live and to work in the tent while in Cairo, or is to carry on ophthalmic work in some suitable building, or be attached to some hospital, or is to have every third month as a holiday, we do not know, but we think our readers will agree with us that the scheme, from the point of view of modern ophthalmology, seems to leave much to be desired. A tent is not a suitable place in which to perform operations upon the eye and a migratory out-patient department is not the ideal of the modern ophthalmic hospital. The sum given is a large one and should, in our view, be used rather as the nucleus of a scheme for an ophthalmic hospital in Cairo. Cases of disease of the eye are there to be found in abundance and such a hospital might easily, and would, we believe, speedily, become an invaluable centre of clinical research. An inspector travelling in the desert can be of little use to any mass of sufferers from diseases of the eye, while his services to the cause of science will be *nil*. For two months out of every three it seems to us that he is to turn his back upon the congregated cases of diseases of the eye and to go a-travelling in search of sporadic examples, which, when he meets them on his wanderings, he will not be able to treat with scientific precision or to watch in any way so as to be able to record useful clinical experiences. We trust that the Sanitary Administration of Egypt will think again before it places before Sir Ernest Cassel a scheme which seems to us to be of little use to anybody—except to the travelling inspector or to the department.

THE UNCONTROLLED SALE OF POTABLE SPIRITS.

WE have received in connexion with the articles on the above subject in THE LANCET of Feb. 21st, p. 542, and of March 21st, p. 820, some interesting communications from certain well-known representatives of the trade, both wholesale and retail, for which we have no space owing to the claims on our columns of more strictly medical matters. We are glad, however, to find that our views are very widely indorsed. The well-known firm of Messrs. W. and A. Gilbey, for instance, write, in regard to the statement sometimes made that the public prefer a blended article, that "we must confess to being somewhat incredulous on the point, at any rate so far as our experience goes, while, as you remark, there can be no justification whatever for the substitution of grain or of a mixture of the two for all-malt spirits unless the consumer is made aware of the character of the article he is purchasing." Again, "we fully endorse what you state to be in your view the remedy for the present state of things—namely, that it should be insisted upon that upon the label of the bottle of all spirits there should be printed a clear statement of the nature of the contents, whether the spirit be an all-malt whisky or partly malt and partly grain spirit, or an all-grape brandy or partly grape and partly grain spirit, and so forth. One thing is quite certain, that were this plan enforced it would put a stop to the importation of many of the articles now shipped from certain countries and which, to put it mildly, have no pretension to the designations under which they are sold to the consumer." Messrs. H. S. Persse, Limited, the well-known Irish whisky distillers, also write to the effect that the refusal of the Commissioners of the Inland Revenue to incur any responsibility as regards guarantees of age on bottled whiskies amounts to their connivance at the practice of substitution and the false labeling of whisky in bond under their officials' eyes. Mr. Walter Long, we note, has made a reply to similar representations on this subject and is reported to have made the astounding statement that the Sale of Food and Drugs Act is sufficient to deal with the question. As was pointed out in the report of THE LANCET Special Analytical Commission on Brandy in THE LANCET of Nov. 29th, 1902, p. 1503, the Sale of Food and Drugs Act controls the sale of spirits only so far as their alcoholic strength is concerned and only provides against the extreme dilution of spirits and not against substitution, and thus a public analyst may report any spirit, whether it is described as brandy, whisky, gin, or rum, as genuine so long as it conforms to a certain strength of alcohol. We are convinced that if greater attention were given to the determination of the normal chemical characteristics of all classes of spirits a system of analysis could be established which would enable an opinion to be given as to whether the spirit was pure, unmixed, or not. As a reference to our analytical columns will show, it is already possible to make very fair deductions on this point, that is, if the analysis be made comprehensive and directed specially to the estimation of the secondary products.

THE PREVALENCE OF SMALL-POX.

THE Local Government Board for Scotland intimates that during the period from March 1st to 15th inclusive 1 case of small-pox has been notified to it—viz., from the burgh of Dundee. The small-pox hospital ships will shortly be removed from the river as a new small-pox hospital has been erected on the Kentish shore of the Thames near Long Reach. As regards Braunton, we mentioned in THE LANCET of March 14th that six cases had occurred in one family in that village. One of these patients has died from the disease. That the outbreak has apparently been confined to the house in which it started is mainly due to the exertions of the medical officer of health, Mr. W. J. Harper, and we are glad to see that at the meeting of the Barnstaple rural council which was held on March 13th Mr. Harper's services were appreciated at their due value by the council. In London during the fortnight ended March 19th there were admitted to the hospitals of the Metropolitan Asylums Board four cases of small-pox. There are still sporadic cases of small-pox in several towns in the north of England, Durham, South Shields, Warrington, Leeds, and Birmingham, all being affected, while an outbreak has also occurred in Dublin.

SEMI-TEETOTALISM.

MOST of our readers will by now be familiar with the aims of the "Semi-teetotal Pledge Association," a body the object of which is to stop all drinking of alcoholic beverages between meals To medical men who are confronted daily with the ravages upon health and happiness that are made by alcohol taken in excess the object of this association is sure to appeal, and we cordially invite practitioners to further its efforts wherever they find appropriate ground. Large numbers of men damage themselves irretrievably by promiscuous drinking without ever becoming drunk. It is in averting this damage that the association may be of such signal service. In many lines of commercial activity the occasional drink, repeated often an incredible number of times during the 24 hours, is the customary precursor or accompaniment of the transaction of business. It needs an exceptionally strong-minded man to depart from the usual method in dealing with his fellows. It needs a still more exceptional physical constitution to pass unharmed through the daily dosing with alcohol that such practices necessitate. The Semi-teetotal Pledge Association wishes to interfere in no possible way with the propaganda of total abstinence. Probably, in fact, the instigators of the association regard total abstinence as the ideal which is to be aimed at and

regard the immediate aim of their own body as a stepping-stone towards the *summum bonum*. It is not at all unlikely that a greater measure of success may attend the comparatively moderate requirements of "semi-teetotalism" than has yet met the efforts of the instigators to total abstinence. The consumption of alcohol in Great Britain shows no marked signs of decreasing. The evils wrought by alcoholic excess remain a serious menace to our national welfare and a cause of vice and disease probably unequalled in this country by any other one thing. Any system that may tend to free the country from this widely prevalent and destructive influence must be welcomed by all who have the good of the nation at heart and to the notice of medical men in particular we would recommend for support the "Semi-Teetotal Pledge Association," which has the patronage of Lord Roberts and Lord Alverstone.

"A CORONER'S COMMENTS."

IN an annotation which we published recently under this heading[1] we remarked upon the proceedings at an inquest held at Bournemouth where an investigation into the cause of death had been undertaken by the medical men in attendance immediately after the death of the patient. We appear to have received a piece of incorrect information or to have derived a wrong impression, as we understood that the patient, who died during the administration of an anæsthetic, had already an abdominal wound, the commencement of an operation, which wound, with the permission of the parents, was afterwards enlarged. The coroner asks us to state that no abdominal wound existed at the time of death and that the abdominal incision was made entirely after death.

THE CLINICAL VALUE OF MEASURING THE BLOOD PRESSURE.

IT is only within recent years that measurement of the blood pressure with the sphygmometer has begun to take the place of vague estimation with the finger, an advance analogous to measuring the temperature with the thermometer instead of estimating it by the hand. In the Boston *Medical and Surgical Journal* of Feb. 26th Dr. J. M. Jackson has published a number of interesting observations made with Gaertner's sphygmometer which show the value of measuring the blood pressure. He finds that the blood pressure in young healthy men ranges from 100 to 130 millimetres of mercury but may be as high as 150 millimetres and that in young women it ranges from 90 to 110 millimetres. Elderly persons have, in consequence of arterial changes, almost always a high blood pressure. Thus in a person aged 50 years a pressure of 175 millimetres need not cause disquietude. Low pressures are uncommon and are found principally in cases of shock and collapse. Pressures of 200 millimetres are not infrequent and should be regarded as dangerous, while pressures of 250 millimetres are very dangerous. In the last year five of Dr. Jackson's patients with pressures of over 190 millimetres have died from apoplexy. Hence he makes it a rule to warn the family in such cases. In kidney disease he has sometimes found very high pressures. Thus a girl complained of headache and dimness of vision. Considerable enlargement of the heart was noticed and there was incipient retinitis. The urine did not contain albumin or casts and there was no dropsy. The sphygmometer registered 250 millimetres, the highest pressure that could be measured. As he was puzzled by the case he admitted the patient to hospital. For a few days nothing more was found until slight hæmaturia occurred. A week after admission she died suddenly. The necropsy showed a tuberculous kidney with occluded ureter and the other kidney hypertrophied. In this case the blood pressure was the only "danger signal." In another case a woman, aged about 60 years, with marked arterio-sclerosis and interstitial nephritis, had been under treatment for some time. The blood pressure ranged up to about 210 millimetres. One day she complained of headache and the pressure was higher than the sphygmometer registered (250 millimetres). While Dr. Jackson was making a third attempt to take the pressure, in order to be sure that he was correct, she fell on the floor unconscious. Death from cerebral hæmorrhage occurred in a few minutes.

[1] THE LANCET, Dec. 27th, 1902, p. 1797.

THE WATER-SUPPLIES OF GLAMORGAN.

WE have received a copy of a report by Dr. W. Williams, the medical officer of health of the Glamorgan county council, dealing with the water-supplies of that county. The report appears to us to be very complete and presents a good deal of information that will be valuable in regard to existing supplies and possible new sources. It is shown that an enormous increase is taking place in the population of Glamorgan owing to the rapid growth of its industrial centres, and that is a fact which justifies giving the subject careful attention. Dr. Williams deals with this question of the increase of population and then, after a section devoted to the physical aspects of the county, refers to rainfall, water-sheds, sources of the water-supplies, and concludes with the results of the examination of the public water supplies based upon chemical analyses undertaken by Dr. W. G. Savage and Mr. J. H. Sugden, B.Sc., F.I.C. Appended to the report are four interesting and instructive maps dealing with (1) the existing and prospective waterworks, gathering grounds and pumping stations and their relation to the South Wales coal field; (2) the physical configuration of Glamorgan and the adjacent counties; (3) the rivers of Glamorgan and adjacent counties; and (4) the rainfall for the year 1901 in Glamorgan and the adjacent counties. We congratulate the Glamorgan county council on the possession of such an admirable report. It is certainly desirable that the county councils and other authorities throughout the country should take steps to gain similarly complete information as to the character and extent of the water-supplies of their own districts.

ACUTE LEUKÆMIA WITH HUGE HÆMATOMA.

AT the meeting of the Société Médicale des Hôpitaux of Paris on Feb. 20th M. Ernest Barié and M. Salmon related a case of acute leukæmia in which the rare complication of a huge hæmatoma of rapid formation was observed. A man, aged 35 years, who had been ill for six weeks came under observation. He was extremely pale and complained of weakness, visual troubles, epistaxis, and diarrhœa. The lower limbs were œdematous, the spleen was enormous, and the liver was enlarged. The lymphatic glands were not affected. The blood was pale and watery. The red corpuscles amounted to 2,015,000 per cubic millimetre and were of unequal sizes and deformed. The leucocytes were greatly increased in number, being in the proportion of one to every two red corpuscles, and varied much in size, small leucocytes and very large ones being found. Arsenic was given. Some days after admission subcutaneous ecchymoses were found on the arms, legs, and abdomen and a tumour of the size of a walnut appeared below the inferior angle of the right scapula. It was painless and fluctuated. In the evening of the same day it had increased to the size of a Tangerine orange. On the following day it was larger than a fist and on the third day it was of the size of the head of a newly born infant. As extension could not be checked either by compression or by hæmostatics and the patient was rapidly becoming worse the tumour was opened in order to

find the source of hæmorrhage. It contained one litre and 300 grammes of pale watery blood scarcely coagulated in several places. The source of hæmorrhage could not be found. The cavity was stuffed with iodoform gauze and a compress of cotton-wool was applied. In the evening the tumour began to reappear and on the following day it was quite a third larger than before, and in spite of the tight sutures blood was constantly oozing from the wound. The patient became weaker and died comatose on the next day. The necropsy showed a spleen weighing 2280 grammes, violaceous, and spotted with greyish infarcts of the size of grains of rice. The liver weighed 3700 grammes and looked very fatty. The lymphatic glands were normal. The case, except for the hæmatoma, was typical of acute leukæmia. The profound alteration in the blood and its feeble power of coagulation were no doubt factors in the production of the hæmatoma.

THE DISTRIBUTION OF PLAGUE.

As regards the Mauritius, a telegram from the Governor received at the Colonial Office on March 20th states that for the week ending March 19th there had been 1 case of plague which had proved fatal. As regards the Cape Colony the medical officer of health of the colony states that for the week ending Feb. 21st 4 cases of plague were discovered at Port Elizabeth—namely, 1 European male and 3 native males, the European male and 1 native male being found dead. The cases were discovered on the following dates: 2 on the 15th, 1 on the 17th, and 1 on the 18th. At the end of the week 2 cases remained under treatment at the plague hospital, Port Elizabeth. Plague-infected rats continued to be found in the town of Port Elizabeth during the week. Plague-infected rats were also discovered at Graaff-Reinet during the week ending Feb. 21st. For the week ending Feb. 28th 18 cases of plague were discovered at Port Elizabeth—namely, of Europeans, 2 males; of coloured, 8 males and 6 females (of these, 1 male and 1 female were found dead); and of natives, 2 males. The cases were discovered on the following dates: 2 on the 22nd, 4 on the 23rd, 4 on the 24th, 2 on the 25th, 3 on the 26th, and 3 on the 27th. At the plague hospital, Port Elizabeth, 2 coloured male patients died during the week, leaving 16 cases under treatment at the end of the week. Plague-infected rats continued to be found at Graaff-Reinet during the week ended Feb. 28th. As regards Hong-Kong, a telegram from the Governor received at the Colonial Office on March 23rd states that for the week ending March 21st there were 28 cases of plague and 28 deaths from the disease.

THE GLASGOW AND WEST OF SCOTLAND COÖPERATION OF TRAINED NURSES.

THE calling of a nurse has nowadays assumed such importance to the medical profession that it has become necessary for the safety of the public that all nurses should be under some kind of rule—that is, they should be either sent out by a well-known hospital or else they should be members of a coöperation or a sisterhood or of some other responsible body. Such a body is the Glasgow and West of Scotland Coöperation. It will be seen from Dr. David Newman's letter in another column that recently the constitution of the coöperation has been revised. This revision has given rise to a good deal of criticism in certain journals, but from a perusal of the constitution which now lies before us we are unable to see that there is any reason for all the pother which has been made. It has been argued that the nurses will under the new constitution be the servants of the coöperation. This argument is founded upon section 2, clause (*e*), of the laws defining the objects of the constitution: "To formulate and circulate among the nurses of the coöperation such by-laws and regulations as may be deemed expedient for defining the duties, professional qualifications, or otherwise, of any nurse being a member, or servant of the coöperation." The objectors to this clause seem to have missed the comma after the word "member." The executive committee includes some of the best-known medical men in Glasgow and the coöperation, judging from a perusal of a report of the tenth annual meeting, would seem to be doing excellent work.

JAPANESE CATTLE AND THEIR ALLEGED IMMUNITY FROM TUBERCULOSIS.

SIR HUGH R. BEEVOR has recently addressed a communication to the Veterinary Department of the College of Agriculture of the Imperial University of Japan and has received through the Japanese Embassy the following interesting reply to his questions from Professor Katushima:—

Veterinary Department, College of Agriculture, Imperial University, Komara, Tokio, Japan,
Feb. 5th, 1903.

DEAR SIR,—In reply to your inquiries contained in the note of Nov. 3rd, 1902, we have the honour to answer as follows:—

1. Whether indigenous cattle of Japan are immune from tuberculosis?—We dare not say that our native cattle are immune from tuberculosis, but according to the report of the slaughter-house inspectors none of the indigenous cattle has ever shown any sign of tuberculosis, while this disease is very commonly met with among crossbred cattle and those imported from Europe and America.

2. Are the cattle housed and are houses of cattle well ventilated?—Our native cattle are either housed or grazed. The construction of cattle stables is here very simple, so that a natural ventilation is fairly going on. Furthermore, cattle are kept isolated from one another—that is to say, every farmer keeps mostly one or two, seldom more, cattle in his yard. It is very rare for them to keep a large number of cattle in one stable together except dairies whose stock consists almost exclusively of foreign breeds or of those crossed with them.

3. Are cattle and milking sheds kept clean more than in Europe?—We do not find any difference.

Yours respectfully,
Professor KATUSHIMA.

Owing to the courtesy of the Japanese Embassy and Professor Katushima the interesting question of immunity from tuberculosis among the native cattle of Japan can be considered and the intricacies of this question are manifest. Sir Hugh Beevor points out that it remains doubtful whether immunity is innate or acquired. If the latter, several factors of environment—viz., good ventilation, absence of excessive milking, and isolation—may exert singly or together such influence as secures immunity.

"RUN DOWN": ANOTHER INTERPRETATION.

IN THE LANCET of March 7th, p. 673, we alluded to this commonly used phrase as one which, though quite descriptive of a well-recognised mental and physical condition, conveys no meaning as regards pathogenesis. In the same article we drew attention to the question of monotony of occupation as productive of fatigue being the probable or possible cause of the condition. A correspondent, in suggesting contributive causes, calls attention to the fact that accumulation of waste products is the undoubted cause of tissue fatigue and suggests that it probably does not much matter whether these waste products are our own or other people's; whether the material giving rise to the sensation of fatigue is derived from our own tissues by internal respiration or from the tissues of others taken in with re-breathed air by external respiration; that it is possible that the school child may be quite as readily fatigued by inspiring the waste products of his fellows as by carrying on his own not often too pronounced mental efforts; and that the business man is more liable than the agricultural labourer to become run down, not so much because he works harder or more monotonously, and therefore personally manufactures more waste products, but because his tissues are more liable to become saturated with the waste products of himself and others derived from the confined atmosphere which he habitually breathes. We all know how tiring to most of us is a long railway journey, more especially if the compartment is crowded and the windows

are closed. Our correspondent remarks that it seems unlikely that such fatigue should be caused by the muscular exertion of sitting on the fairly comfortable seat usually provided or even by the mental effort of reading the usual magazine, and considers that the effect is due to the saturation of the tissues with waste products taken in through the lungs. He suggests that the pallor and blueness observable in most persons after exposure to an atmosphere highly charged with the products of respiration are due to contraction of arterioles and dilatation of venules, and that this condition is the essential factor in the production of what he calls "waste-product poisoning"—that this condition must necessarily imply lessened metabolism and consequently lowered vitality and increased susceptibility to the attacks of the microbe—in short, a state which might be described by the phrase "run down." We think that there may be something worthy of consideration in this view of the matter.

THE CORPORATION OF LONDON AND TUBERCULOUS MEAT.

THE Corporation of London has for many years instituted legal proceedings (resulting in many instances in the infliction of heavy fines or terms of imprisonment) against farmers, butchers, and other persons for sending diseased meat into the City markets or for exposing the same for sale. The corporation has been advised that in some cases such offence may have been due not so much to wicked greed or to gross carelessness as to ignorance of the symptoms of disease in the living animal and of the appearance of unsound carcasses after slaughter. With this idea the corporation has published a notice embodying the indications of tuberculosis, both in the carcass and in the living animal, drawn up by Dr. W. Collingridge, the medical officer of health of the City, and Mr. King, veterinary inspector of the orporation. The notice will act as a guide for the use of all salesmen and dealers and is consequently couched in popular language, but it is admirably clear and should leave no farmer or butcher the right for the future to plead ignorance in excuse for the wicked act of purveying diseased food.

THE CRUSADE AGAINST MEASLES.

IN THE LANCET of March 21st, p. 826, we referred to the action taken by the health authorities in the city of Norwich and in the administrative county of London in regard to the prevention of, or to the lessening of the number of, cases of measles. We must call our readers attention to the fact that so far as concerns London measles is now no more a notifiable disease than it was before the publication of the order of the London County Council. The order applies certain provisions of the Public Health (London) Act, 1891, and has nothing to do with medical men as such, but only in their capacity as ordinary citizens. There is no question of notification, but the order deals with regulations for the prevention of infection by clothing, rubbish, bedding, and the like. We lay stress upon these points for there appears to be an impression abroad that measles is now a notifiable disease under the Infectious Diseases Notification Act, 1889. This is not the case. We have now received the report on measles of the medical officer of health of Huddersfield—a report which was accepted by the borough council. Notification with isolation has been adopted; that is to say, "all appropriate cases" are to be removed for isolation during inter-epidemic periods. During an epidemic period only such cases are to be removed as special circumstances may indicate. Susceptible "contacts" are to be kept under observation. It is thus hoped that epidemics, if not prevented, may be at least postponed. We think that the results of these experiments will be of great value Measles is, of course, a most difficult disease to deal with from the prophylactic point of view, but that is no reason for not trying to lessen both its spread and the mortality therefrom.

HUNTERIAN SOCIETY.

THE Hunterian Society has decided to hold a discussion upon the present methods of treating pulmonary tuberculosis. The subject will be divided into sections, the discussions on which will be opened by recognised authorities. The meeting will take place at the London Institute, Finsbury-circus, on Wednesday, April 8th, at 8.30 P.M., and all members of the medical profession are invited to attend and to take part in the discussions. There will be an exhibition of plans of sanatoriums and members of the profession willing to lend plans are requested to communicate with the senior secretary, 1, Victoria-square, S.W., as early as possible.

THE LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.

A WISH has been expressed by many members of the London and Counties Medical Protection Society that Mr. Jonathan Hutchinson, F.R.S., who has for so many years presided over the interests of the society, should be invited to meet the members on his return from India. In accordance with this expressed wish a committee has been appointed to arrange for a dinner in the first week of May next and it would greatly facilitate the arrangements for the dinner if those members of the society who intend to be present would send in their names to the honorary general secretary, Dr. Hugh Woods, at the earliest date possible, together with the names of those whom they may wish to invite as guests. The price of the dinner tickets, including wine, will be 21*s*.

EMERGENCY INSTRUMENTS.

A SURGEON is often compelled to operate without some appliances which at first sight may seem essential for success, but inventiveness and ingenuity will often succeed in adapting to his need some article of household use. A year or two ago we published a case in which a surgeon—far from surgical instrument makers—wished to perform a suprapubic cystotomy. He desired to distend the rectum by the inflation of a Petersen's bag, but, although, alas, no such thing could be obtained, yet an effective substitute was readily devised. He took a portion of the inner tube of a bicycle tyre and, fastening to it a valve, he obtained a bag which was easily inflated and served to render the bladder more accessible. Last year we printed an account of the varied uses to which a surgeon could put a hairpin, an article generally obtained with readiness. It served for more purposes than can readily be remembered. However, it is to the armamentarium of the carpenter or engineer that the surgeon most naturally turns when in need. Many of the surgeon's instruments are but modifications of the carpenter's, and chisels, pincers, saws, awls, and gimlets have all in their turn proved useful to the surgeon. Fortunately we have in boiling a ready and easy method of rendering these tools aseptic and the results obtained from the employment of these tools need not fall short of those resulting from the use of instruments specially designed for surgery. We print in this number of THE LANCET (p. 883) a very good instance of the adaptability of the surgeon in emergencies. Dr. F. M. Morris of Ceres, Cape Colony, in consultation with Dr. Munnik diagnosed extradural meningeal hæmorrhage in a case of coma after injury. The patient was rapidly growing worse and no trephine was obtainable. A brace-bit was borrowed from a carpenter and by its means a piece of bone was removed by Dr. Munnik and a blood-clot was found. The wound was enlarged, the bleeding vessel was tied,

and the patient recovered. We congratulate the operators on the case. Although in this country the trephine is practically the only instrument employed for removing a portion of the skull, on the continent of Europe an older form is still extensively used, which bears a close resemblance to the "brace and bits" of the carpenter. Great are the achievements of surgery in well-appointed hospitals and with all imaginable instruments, but still greater credit is due to the surgeon who with few instruments is able by the adaptation of existing appliances to achieve a successful result.

RADIUM AND THE TRANSMUTATION OF ENERGY AND MATTER.

As our readers know, we have for the past few years expressed the opinion that the researches on radio-activity which were being carried out in France and in this country would lead to remarkable developments and it must be admitted that as the nature of this phenomenon has been more fully studied the results have become more than ever wonderful and fascinating. There seems little doubt that radium is a separate entity, that it is a distinct element which has hitherto escaped human observation, and certainly it possesses properties of an infinitely more remarkable character than any other chemical element in the chemical hierarchy. We can to some extent understand the action of platinum black which sets fire to hydrogen by bringing it into intimate contact with oxygen within its substance resulting in the union of these elements with the formation of water, and we can understand the respiratory action of the plant in assimilating carbon from the carbonic acid gas of the air and returning oxygen, and we can understand the respiratory action of the animal in which carbon is given up and oxygen is absorbed—these are analytical and synthetical processes; but it is decidedly less easy to comprehend how it is that an element is able to go on indefinitely giving off etheric vibrations while there is no apparent chemical change. Some have even thought that we are dealing with perpetual motion and an anomaly at first sight appears when we come to consider the great law of the conservation of energy. It is appalling to think what enormous potentialities must exist in radium which never ceases to give off etheric vibrations. But surely *ex nihilo nihil fit* must still be true. It would seem that in the physical and possibly in the chemical sense also radium is the philosopher's stone. In a word, this element has the power of transmuting energy—picking up, so to speak, certain energies around it in space and presenting them in new shapes in what we know as heat and light. As long as there are forces accessible to it so long will this wonderful work of transmutation go on. But what is the nature of this translation and how is the change affected? This is the crux upon which physicists and chemists alike are turning the full force of their reasoning faculties, and perhaps, after all, the phenomenon may be beyond defining much in the same way as is electricity at the present time. It is, of course, a matter of speculation as to whether these wonderful properties will ever be turned to practical account. They certainly suggest a number of useful applications. We may be, for instance, on the verge of utilising new sources of heat and light, and if that be so there can hardly be any limit to possibilities. Obviously, however, an element possessing such potentialities must be dangerous; it blisters the skin, for example, and when kept in the waistcoat pocket it is said to have burned a hole in the flesh. Radium is of course a rare material and difficult to isolate in a state of purity and possibly therefore its price will always be prohibitive of any extensive utility. If the view is correct that radium acts by reason of its power to translate one kind of energy into another the result may be, after all, the transmutation of metals or matter, for in the phenomenon of radiant matter or in the conduct of electrons matter and force seem to merge in one another.

ROYAL INSTITUTE OF PUBLIC HEALTH: CONGRESS AT LIVERPOOL.

THE Royal Institute of Public Health has accepted an invitation from the corporation of Liverpool to hold its next annual congress in that city on July 15th to 21st. The business of the congress will be transacted at the University College and its scope is sufficiently indicated by the following sections into which the work may be conveniently arranged, but these will be so grouped as to facilitate discussion of the subjects comprised under each section: (*a*) Preventive Medicine and Vital Statistics; (*b*) Municipal Engineering; (*c*) Child Study and School Health; (*d*) Sanitation of Congested Areas and Re-housing the Dispossessed; (*e*) Tropical Sanitation; (*f*) Bacteriology and Comparative Pathology; (*g*) Port Sanitary Administration; and (*h*) Municipal and Parliamentary Hygiene. Full opportunities will be given to delegates to inspect and to investigate the various sanitary operations and municipal undertakings carried on in Liverpool, including lighting and locomotion, water-supply, measures taken to re-house the working-classes, the public baths and washhouses, the sterilised milk depôts, hospitals, sanatoriums for consumptive patients, and the like. Delegates will be furnished with a well-illustrated descriptive handbook. Previous congresses of the Royal Institute of Public Health have been largely attended and important results have followed upon their deliberations. The fact that distinguished men have already intimated their intention of being present affords reason to believe that the Liverpool Congress will be in no way less interesting than previous ones. A subscription of one guinea will entitle each delegate not only to published copies of the transactions of the congress, but will also entitle him to receive the monthly publications of the Royal Institute of Public Health throughout the ensuing 12 months. Apart from the actual business of the congress arrangements will be made which, it is hoped, will insure the comfort and convenience of delegates. Dr. E. W. Hope (the medical officer of health of Liverpool) has been appointed the honorary secretary of the congress. The president of the congress will be the Earl of Derby, K.G.

THE PREVENTION OF MALARIA.

THE directors of Akrokerri (Ashanti) Mines, Limited, have had submitted to them recently by their medical officer, Mr. W. Barclay Dick, a report for the past 18 months which contains some passages of considerable interest. "On August 1st," says Mr. Dick, "the camp consisted of one compound for the staff, three compounds for the miners, and the native labourers' village. The primitive condition of their surroundings and the lives of the natives necessitated much reform which has now happily been effected. It was decided to select a site for a new village, as the straggling huts placed at every angle rendered proper drainage impossible, the consequent numerous pools alive with the larvæ of anopheles being an ever-present menace to health. A clearing was accordingly made half a mile away from the present camp and here the building of the village was begun in March, 1902, and completed the following July. The streets were laid out 15 feet wide, and between each house a space of five feet was allowed. The village is well drained; at a considerable distance away and on either side clearings have been made with convenient paths leading to them where refuse is thrown, so that the village now stands ridded of its two worst evils, and is in every respect clean and

healthy. The old village has been destroyed, and wherever found all breeding places of anopheles have been filled in." Mr. Dick's report, after giving information concerning the general health, accommodation, and water- and food-supply of the miners, concludes with these remarks: "In August, 1901, prior to the introduction of reforms, 55 per cent of the staff were on the sick list due to malaria, of whom one had to be invalided. In September 35 per cent. were sick; in October 25 per cent., of whom two were invalided. In striking contrast stands out the fact that since the camp was placed on a working sanitary basis only one case of malarial fever was contracted, its duration being but one day. During the entire period of 18 months the death-rate was for Europeans *nil* and for natives two per 1000. The use of the mosquito curtain is strictly enforced and in the prevention of malaria the daily dose of quinine finds a place."

THE QUESTION OF MOVING ST. GEORGE'S HOSPITAL.

AT their meeting on March 20th the governors of St. George's Hospital passed a resolution to the effect that if a suitable offer were forthcoming and a suitable site were to be obtained they would be willing to consider the removal of the hospital from its present position. In the meantime a committee has been appointed to consider the question carefully and to discover presumably what offers are actually available. The question arose through an offer being made to the hospital by a reputable firm of £300,000 for that portion of the site which is the property of the hospital. This is one-third of the ground covered by the present institution. We are pleased to see that the resolution passed at the meeting was of a very non-committal character. It is quite obvious that some of the best judges in the matter of hospital distribution in London are not at all convinced that St. George's Hospital should be removed from its present site and the same view is certainly held by some who have had long experience at, and intimate acquaintance with the work of, St. George's Hospital. We may mention in particular Mr. Timothy Holmes who took the chair at the meeting on the express understanding that he might nevertheless be allowed to state his views. These views, we gather from the report, were strongly opposed to moving St. George's Hospital, at any rate, on any basis that is yet put forward. Obviously if an ideal site were provided within the area now mainly benefited by the hospital and if a huge sum were offered, one so large that a perfect new establishment could be not only built but helped in its permanent maintenance, then St. George's Hospital would be unwise not to avail itself of the opportunity. These conditions at present, however, have not made themselves manifest and, so far as we can see, the arguments brought forward in favour of a move are no more cogent than those in favour of the present position. One thing seems clear—namely, that the present hospital is, mainly through lack of space, not in all respects efficient.

THE annual general meeting of the governors of the Royal Dental Hospital of London will be held at the hospital on Tuesday, March 31st, at 5.30 P.M., with Lord Kinnaird in the chair, to receive the annual report and to elect the committee of management, treasurer, and auditors for the ensuing year.

THE Edinburgh University Union, which since its commencement in 1889 has done so much to improve the social and academic life of the university, has greatly increased in membership and it has been decided to extend the present buildings. The total amount of money required for this purpose is estimated at £20,000, of which sum £5000 only have as yet been subscribed. There should be little difficulty in getting the £15,000 still required if graduates and those interested in Edinburgh University, while financially helping the extension committee, would at the same time make the matter more widely known among their friends. Subscriptions should be sent to Mr. James Walker, C.A., the treasurer of the union, and on application to the secretary full particulars of the extension movement will be forwarded.

SEVERAL daily papers credit Lieutenant-General Phelps, President of the National Anti-Vaccination League, with having asserted at the recent annual meeting of that league that "the successful candidate at Rye, like Mr. W. Crooks, was an avowed anti-vaccinist." Dr. C. F. Hutchinson, the new Member of Parliament for the Rye Division of Sussex, has been seriously misrepresented by Lieutenant-General Phelps. He is in no sense an opponent to vaccination, though, like ourselves, he does not think much of the existing legislation. Lieutenant-General Phelps ought to explain his statement, whatever it was, so as to remove the stigma that he has put upon Dr. Hutchinson, but probably Dr. Hutchinson will not think it worth while to ask him to do so.

THE British Balneological and Climatological Society desires to induce as many non-members as possible to take part in the tour to the northern spas, as it is anxious to dispel what it considers to be the very prevalent notion that none of our home stations is properly equipped for special means of treatment. A full account of the tour will be found in THE LANCET of March 21st, p. 845, but the society particularly wishes to emphasise that it will cordially welcome all non-members who care to join the party and to see for themselves that the home resorts to be visited are as well worthy of support as their foreign rivals.

WE regret to announce the death of Dr. T. J. Maclagan which took place on Friday, March 20th. Dr. Maclagan was the pioneer of the treatment of rheumatism by salicylates, general attention being drawn to the matter by an article by him which appeared in our columns on March 4th (p. 342) and 11th (p. 383). 1876.

THE annual general meeting of the Medical Graduates' College and Polyclinic is to be held on Tuesday next, March 31st, at 5.30 P.M., when the chair will be taken by the President, Sir William Broadbent, Bart.

THE Medical Register for 1903 has now been published and shows a net increase in the registered number of the medical profession of 320. Other features in the Register will be noticed by us in a detailed review.

LORD SELBORNE, First Lord of the Admiralty, will distribute the prizes in connexion with the Naval Medical School at Haslar on Tuesday next.

ROYAL EYE HOSPITAL, SOUTHWARK.—The annual meeting of the subscribers to this institution was held on March 18th when Mr. W. Moresby Chinnery, the President, occupied the chair. Mr. Malcolm M. McHardy, the senior surgeon to the hospital, in presenting the report said that during the year nearly 20,000 poor patients had been assisted at an expenditure of £3319. Morality in hospital finance was too often discouraged. The Royal Eye Hospital kept itself free from debt, yet King Edward's Hospital Fund as a seal of approbation gave the hospital a grant of £100, while it awarded 25 times as much to an analogous charity which with three times the expenditure could not claim to administer twice the amount of charity among the poorer districts of all London. The work of the hospital had trebled in the last 20 years and was now seven times what it was 30 years ago. The buildings had been extended to meet the growing requirements of the neighbourhood. The report was adopted.

TEMPORARY HOSPITAL BUILDINGS.

THE deplorable disaster at Colney Hatch, in which 51 unfortunate patients perished, provides a terrible object lesson which is not being disregarded by those responsible for the erection of these temporary structures. The one question that engrosses the mind of every interested person is, How can the risk of such an occurrence be prevented in the future? Temporary buildings exist similar in the main features of their construction in many places, both as asylums and isolation hospitals, some of very considerable extent. The temporary buildings at Colney Hatch covered one and a half acres and those at Banstead cover three and a half acres, the bulk of which are identical in structure with those at Colney Hatch, but in some metallic lathing finished with plaster has been used in place of wood, as is also the case at Hanwell and Epsom. There are some extensive wood-framed or wood-lined buildings at other county asylums, while similar buildings exist in the infection hospitals at South Tottenham, Tooting, Dartford, Gore Farm, and elsewhere. Indeed, there are few of our large hospitals which have not had recourse to some of them. Should a fire occur, say, in a ward full of surgical cases not easily moved, a similar or worse disaster might befall.

The necessity for these temporary buildings in connexion with existing county asylums has arisen owing partly to the greater advantage taken of the asylums by the Poor-law guardians and by the public who evince much less aversion to consigning the care of relatives to these institutions than was formerly the case. This within the last 30 years has produced an apparent increase in the number of the insane in a proportion far greater than the rate of increase in the population would suggest. Every wretched imbecile or demented old woman who at one time might be seen in the streets of all towns persecuted by an attendant gang of urchins now finds a haven of rest in the county asylum. The result of this is that calls are made upon the asylums greatly exceeding the contemplated increase of cases which formed the basis upon which they were built. The over-burdened ratepayer is also an object of solicitude on the part of the county authorities; therefore, patients are crammed into existing institutions until the long-suffering medical superintendent will no longer be responsible for the effects of overcrowding. At this point it would be useless to seek immediate relief by permanent additions to the existing buildings, as some three years must elapse before the wards would be ready to receive their inmates; thus, temporary buildings are resorted to. Now nearly all these large institutions maintain a clerk of works and a staff of mechanics to keep the building in repair and this staff is augmented by such of the patients as are capable craftsmen; hence, in some cases many of the additions of a temporary character are carried out by their means, supplemented by any assistance that may be required from outside sources. Temporary buildings have been carried out in this way at a cost of some £15 per bed (exclusive of internal fittings), a very low figure as compared with similar structures in other well-known instances. Wisdom after the event is a commodity never in much demand, yet it may be well to consider some of the details in connexion with the recent fire in order that the mistakes made at Colney Hatch may be avoided. Many of our readers are in their medical capacity closely connected with such buildings and must have much more than a passing interest in the question. It is therefore well within the province of THE LANCET to offer a few practical details showing how such buildings may be rendered less liable to disaster and how others may be erected in the future at a moderate cost and of comparatively fire-proof construction.

The following particulars are not intended for the instruction of the professional architect, to whom they must, of course, be familiar, but, as has been seen, numbers of these places have been built in the erection of which an architect has not been employed. The incomprehensible thing is, how the experts who advise the Home Office, the London County Council, and the Lunacy Commissioners could possibly have permitted such palpably risky structures to have been passed. It is to be feared that the misleading title of "temporary" has had much to do with this lamentable error, also the fact of their being almost level with the ground may have given a false idea of security. It would, indeed, be difficult to conceive buildings more capable of rapid consumption by fire or more conducive to disaster than some of those under consideration. The internal lining of dry resinous pine coated with oil varnish, with abundant air space within and around the wood-framed walls, roof, and floor, contains every element for feeding a fire. The tarred felt lining to which the air is conducted through the corrugations of the external iron would lend additional aid, with the added terror of suffocating smoke. When fire has once gained a hold of such a structure the rapidity with which it spreads is prodigious. The long shallow space under the building between the ground and the wood floor, often lightly boarded in at the sides or, as at Colney Hatch, inclosed with brickwork, acts as a flue through which the flames leap and roar, gaining ready access to the hollow walls on either side and, as was the case at Colney Hatch, the building soon becomes a veritable furnace. The evidence at the inquest showed that the heat and flames came through the floor.

Nothing can be more terrible than the account given by eye-witnesses of this fire. The enormous volumes of dense black smoke formed the chief impediment to successful action in the first instance; afterwards, when the flames had thoroughly obtained a hold, human efforts were powerless. The discipline displayed by the staff is worthy of all praise, for in addition to the inmates of the doomed buildings 600 patients had to be moved from one of the threatened permanent wings. While it is satisfactory to know that those in authority have their attention directed to the necessity of remodelling these buildings, as is shown by the inquiries on all sides as to the best means of improving them, too much reliance must not be placed upon the simple substitution of plaster for wood on the walls. Efforts should also be directed to render the floors and the lower part of the partition walls less combustible by filling in the spaces between the floor joists and the partition framing with concrete or some other fire-resisting material.

At Colney Hatch there were three blocks, each some 170 feet by 38 feet, built in parallel lines, having a considerable space between each block. A long corridor cut through the centre of these and divided the day from the night wards of each, connecting all into practically one building. The boiler house formed a terminal at the lower end of this corridor, while the quarters of the medical officers did the same at the upper end. In addition there were two smaller L-shaped blocks, X 1 and X 2, on one side at the lower end used as sick wards. On the opposite side of the corridor to No. X 2 and at right angles to it was another corridor leading to the main building, the general plan being vertebrated, with a boiler house and officers' quarters as head and tail. Beneath the floor line of these buildings, including the corridor, were brick walls forming the foundations upon which the partition walls rested. Owing to the unevenness of the ground there was a considerable space between the ground and the floors. In fact, the space beneath the corridor formed a flue up which the fire (which started in a small room adjoining one of the end blocks) rushed and gained a hold upon each succeeding block. It was the construction of this corridor that proved to be another fatal mistake.

The introduction of some form of baffle screen midway between each block (see illustration) would have been of great service in checking the fire if in addition some safe exit had been provided for the heat and smoke in each section, such as an open corridor. These corridors in isolation hospitals are open at the sides, being little more than covered ways, but in the asylums they are completely inclosed. How the fire originated at Colney Hatch will probably never be known. It would seem desirable that all gas lights should in future be inclosed in lanterns with locked doors in place of the wire guards in common use. The use of gas stoves and independent slow-combustion iron stoves with flue-pipes is to be condemned in such buildings, not alone on the grounds of safety, but also of health.

The question of exits, under the inevitable conditions that pertain to asylums, is one of considerable difficulty; abundant provision should be made in all cases. The number available at Colney Hatch might have been sufficient had it not been for the dense smoke and had there been no confusion with the keys. Had the fireman possessed a key many precious minutes might have been saved. The nurses off duty, roused from sleep, would probably be without keys as they hurried to render assistance. It did not appear from the reported evidence that either Nurse Hayling or Nurse

Lambert unlocked any doors, though the former vainly endeavoured to pass some patients through the burning corridor. The patients, either excited by the fire or stupefied with terror, would in all cases prove a serious impediment to prompt action by the attendants. Some simple and secret method by which the locks might be released, if only available at night, would conceivably be an advantage.

The evidence given at the inquest, as published in the daily press, was not very convincing as to the adequacy of the provisions made against an outbreak of fire. The reservoir stood at a low elevation only sufficient to give a constant pressure of three pounds to the inch; there was, however, in the reservoir an abundant supply. Stationary pumps were fixed in the engine-house where steam was kept up day and night. The night fireman received the alarm within a minute or two of the fire being discovered and the pumps were instantly set to work, affording abundant pressure to the hydrants which the nurses were then using, but from which they were quickly driven by the smoke, they then directing their efforts to removing the patients. It was owing to these hydrants being abandoned whilst still running that the pressure of the water was reduced so as to render the external hydrants useless. It was not until the mains could be cut off and plugged outside that the external hydrants could be got to work. There being plenty of water in the reservoir does not condone the fact that water was not available at the point required, necessitating as it did the engines using a makeshift supply from an adjacent water-course. Pressure augmenters and pumping into a main, while compensating for any defect in pressure from lack of head, cannot make up for a limited supply due to the smallness of a main and loss of flow from friction.

Two lessons may be derived from this disaster. 1. That the size of the main (three inches) was quite inadequate to supply the number of hydrants connected to it. One witness stated that there were 13 hydrants in the annexe. 2. That stop-valves should be placed in each branch main accessible from the outside, so that the supply to any internal hydrant could instantly be cut off under similar conditions. The mains have been described as having melted, but this was incorrect. The iron pipes that melted were those connected with the hot-water apparatus running under the floors of the corridor and in no way influenced the pressure in the main. The presence of hydrants, hose pipes, and red buckets may have a moral effect, but unless accompanied by sufficient water-supply those who rely upon them do but dwell in a "fool's paradise." It should be remembered that the action of water in extinguishing fire is twofold. One is the mechanical action of knocking out the fire by the simple force of the stream and the other is the reduction of the temperature of the burning mass to a point below that of combustion and evaporation. The defects in the provision against fire had been partially recognised by the London County Councils Asylums Committee in this instance, as in its last annual report it suggested the laying of new mains and the provision of a pump for pumping directly into them. In this connexion the extracts reprinted from the report of THE LANCET Special Commission on Water-supply and Disposal of Sewage in 1896 given at the end of this article may be of interest.

METHODS IN COMMON USE FOR RENDERING BUILDINGS FIRE-RESISTING.

Before dealing with the construction of new buildings a glance at certain points to be borne in mind when providing against fire and an endeavour to see how far they can be applied to certain existing buildings will be of guidance. The use of non-inflammable materials is of course the first essential in order to limit the amount of smoke and fire. The use of iron, unless encased in some fire-resisting material, is a delusion and a snare, as it becomes soft and unstable upon the application of heat. Inclosing with concrete is not a sufficient protection for iron against fire. The prevention of the free circulation of air round any inflammable material, especially in the case of wood floors and framed partitions, is to be aimed at. The use of cement or plaster on metal lathing for ceilings and wall linings is essential, also the substitution of cement in place of wood for skirtings, door and window architraves. Iron may well be used for the windows, while the use of *rock* asphalte or cement for the surface of the floors of corridors and for covering external flats is important as reducing the risk from fire. Heating by means of hot water is to be considered preferable to the use of close stoves and flues. The use of fire-resisting paints, or distemper, are to be preferred in place of oil paints and varnish, but care in this respect must be exercised as zinc chloride enters largely into many fire-resisting paints, the fumes of which are insupportable by human beings. The wood must be thoroughly dry before any paint is applied or it will flake off when heated. Stone is a risky material to use unless solidly bedded owing to its rapid extension by heat, especially on staircases where the ends are pinned into one wall which prevents its expansion throughout and thus causes fracture. Solid door and window frames are preferable to the usual box sash frames and door linings, teak or oak being more suitable than deal. The insulation of each building or of each compartment one from the other so far as is possible is to be aimed at. Fibrous plaster has been found to resist intense heat for some 20 minutes or longer, but afterwards on application of water it crumbles away. The provision of an exit for smoke and heat in the event of a fire affords a better immediate chance of escape to the inmates of the building and to the adjacent property, but it is not altogether an unmixed blessing. It acts as a flue and causes a draught to one point, thus drawing the fire. One of the means resorted to at a fire by firemen is to break the windows and to admit air from all sides, thus checking the draught. This acts in the same way as removing a blower from an open fireplace.

TREATMENT OF EXISTING TEMPORARY BUILDINGS.

Floors.—In order to reduce the fire risk in existing buildings of wooden construction in the first instance the floor should have the spaces between the joists filled in with some non-combustible substance such as concrete or hollow plaster slabs.

Partitions.—The lower part of the partitions at least should also be treated in the same way, as wood partitions when filled in with brickwork throughout (called technically brick nogging) and plastered, are practically fire-resisting. In the case of most temporary buildings the floors will be found to be raised from the ground, the joists being carried upon brick piers. This is done partly to avoid the uneven surface of the site and also to afford ventilation. All internal wood lining must be removed and plaster slabs on metal lathing substituted; in cases where the spaces between the wood framing are not filled in as suggested the plaster slabs should have a backing of silicate cotton as a protection against both cold and fire.

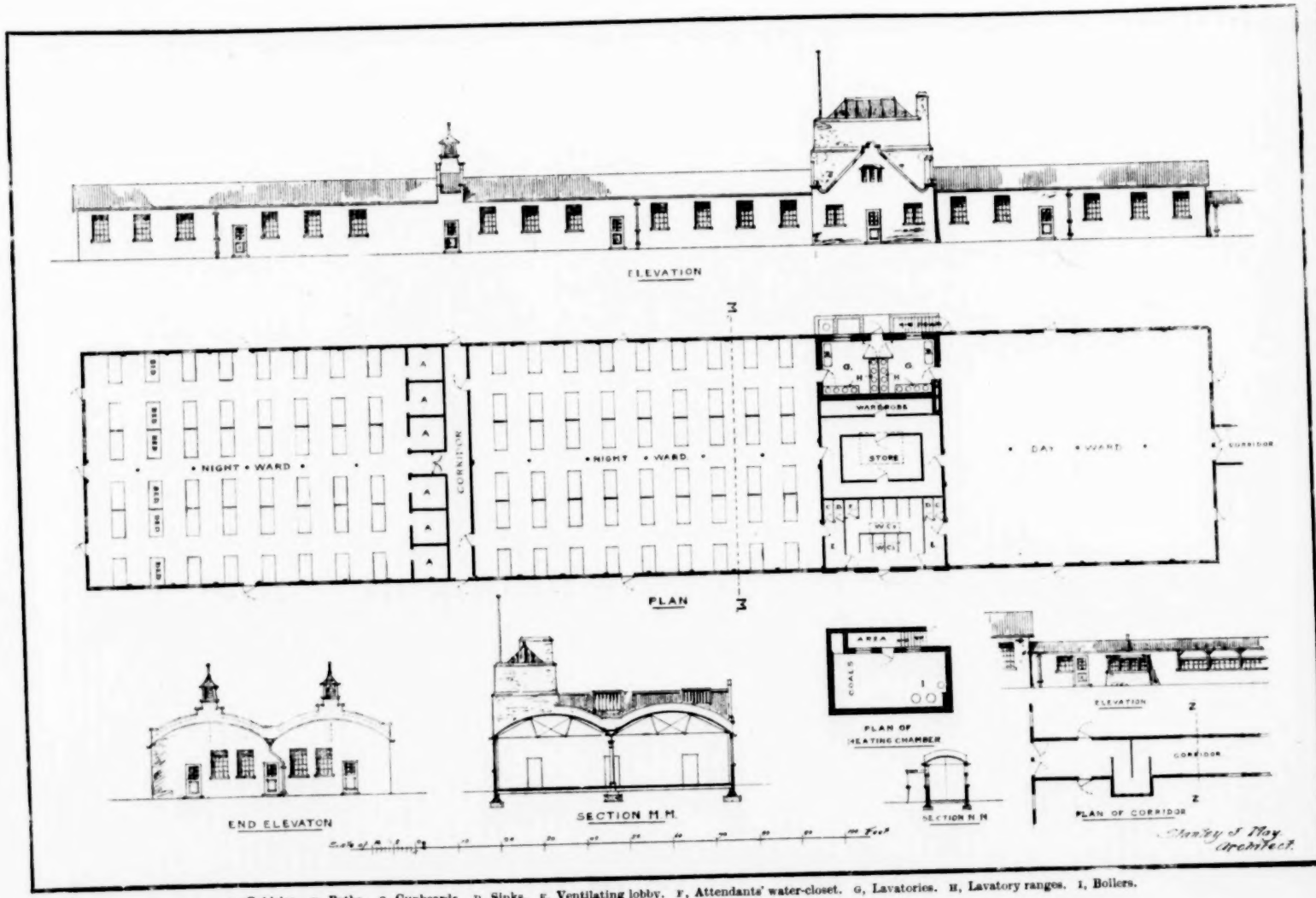
Ceilings.—The wood linings should be removed and fibrous plaster slabs on metal lining substituted. All exposed iron work or wood tie-beams and collars should be encased in some fire-resisting materials such as asbestos.

Lighting.—All gas lights in asylums should be inclosed in locked lanterns.

Heating.—Gas stoves should stand upon a solid stone base and any adjacent woodwork should be protected by an intervening piece of very fine mesh iron gauze. This will be found a better non-conductor of heat than the sheet iron in common use. Slow-combustion iron stoves, gill stoves, and independent gas stoves with flue pipes are open to objection. If used care should be exercised as to overheating and special attention is required to see that the flue pipes are properly insulated where they pass through the roof or wall. The pipes at this point have a tendency to perish quickly. They should here pass through a second larger tube with a free air space between them and the outer tube should be packed with silicate cotton between it and the framing of the roof or wall. Where it passes through the roof this air space may be utilised for extracting the vitiated air by extending the outer tube a few feet above the roof as is often done in the case of steamships for ventilating the lower decks by means of an outer casing to the funnel. Many years ago this system was successfully applied to the Hospital for Sick Children in Great Ormond-street by a Mr. Knight. Heating by hot water is certainly safer, cleaner, and more healthy. It is much more expensive in the first instance, but more economical in maintenance. A portion of the pipe should pass through a water chamber to prevent undue dryness in the air.

GENERAL DESCRIPTION OF THE ACCOMPANYING PLAN.

The drawings suggest the general treatment for a temporary asylum or hospital giving accommodation for from 100 to 167 patients, according to the purpose for which it is intended. The building consists of four distinct principal compartments—viz., the day ward, the central block, and two night wards. The day ward would be



A, Cubicles. B, Baths. C, Cupboards. D, Sinks. E, Ventilating lobby. F, Attendants' water-closet. G, Lavatories. H, Lavatory ranges. I, Boilers.

connected by means of a corridor to any existing permanent or other buildings. The central block—which contains on the basement floor the boiler-house and fuel store—is divided on the ground floor into three distinct compartments, the one over the boiler-house consisting of the two lavatories and bathrooms, the middle one being the general store and wardrobe, while the water-closets, sinks, and broom closets are placed in the third. It will be noticed that these offices are equally accessible from either the day or the night wards. The two night wards are divided by a passage, the walls of which are carried up well above the roof line, forming a protection in the event of fire. The division of this ward may be considered by some unnecessary or even undesirable, but it may here serve to illustrate a possible means of insulating one building from another. The general scheme supposes the existence of an adjacent permanent building, otherwise accommodation would be required for the general medical officers and staff and also for the kitchen and other administrative offices. In a case where a number of blocks are required the better plan would be for them all to radiate from one common centre by means of short corridors, the boiler-house and administrative buildings being the central point. A considerable addition to the cost is entailed by the central brick water tower, which would be unnecessary in cases where a sufficient water-supply existed. This tower contains in the basement two boilers for the heating of the buildings by hot water and a boiler for the supply of hot water for lavatories, baths, and sinks. Overhead is a tank-room fitted with cisterns capable of storing 7500 gallons of water, which in case of fire would afford a supply of 200 gallons per minute for some 35 minutes at a pressure of 10 pounds to the inch.

Principal features of the plan.—The leading idea is the incombustible character of the building; a brief account of its constructive details will follow under that heading, but in addition there are two or three points first to be noticed—viz., ventilation, insulation, and means of exit.

Ventilation.—The floor space provided for each bed is some 82 square feet, which is an unnecessary amount for a patient enjoying good health. The air space per bed is 960 cubic feet, not taking account of the space above the springing of the roof, which is considerable and which may be set against the space occupied by beds and furniture. Provision is made for ventilating each of these wards by means of two large flues near the ceiling line measuring three feet six inches by two feet, built with iron framing lined with fire tiles, an upward current of air being induced by a coil of hot water pipes fixed in the upper part of each flue. Through these flues in the event of a fire much of the smoke and heat possible in a building as here shown would escape, but no flue would carry off the smoke from buildings such as those at Colney Hatch. Fresh air is admitted through cast-iron upright hot-water radiators, or shafts upon Tobin's principle might be used, in each of which would be fixed a small radiator; the air thus warmed rises and assists the exit of the vitiated air through the ventilators; when cold air is admitted at a high level it lowers the temperature of the warmer upper air already fouled by the emanations from the lungs and skin, causing it to fall and to be inspired again by the occupants of the rooms. Outlet tubes where not artificially warmed should be placed against an internal wall, the joints should be air-tight, and a smooth internal surface is desirable, otherwise the current of air passing through will be sluggish. Very long shafts are to be avoided as the friction in them tends to check the draught. The size of these may be taken as fixed by the Barracks Commission—viz., one square inch of surface of inlets and outlets for every 50 cubic feet of air space, so that 20 square inches would be equal to 1000 cubic feet. This, it is presumed, would change the air in the room three times per hour, in ordinary circumstances, where the inlets and outlets are properly placed. Any one inlet larger than 12 square inches is undesirable. The windows are also provided with long fanlights to open for use in warm weather, when the difference between the internal and external temperature is not great.

Insulation in case of fire.—The doors communicating between the wards open directly opposite a fire-resisting partition and are each removed some distance one from the other, thus forming a check to the progress of the flames. In this situation fire-resisting doors might more readily be closed in the event of an outbreak if their use was deemed necessary, though in the present scheme they have not been provided. Doors made of teak with solid frames are only provided for in the estimate within the building, all external doors being of deal. When folding doors are shown they are fitted with automatic latch bolts in the frame over the doors, so that one door being unlocked and opened the other is released. Each of the fire-resisting partitions between the wards is carried up some distance above the roof. The ventilating lobbies between the day and night wards and the water-closets are covered in overhead with fire-resisting material and fitted with teak doors. The partitions inclosing the store room are carried up to the roof and the store is provided with a skylight and ventilated with louvres. The floor being solid fire cannot be communicated by it to other buildings, as is the case where there is an air space beneath.

Exits.—The number of exits provided is another feature, there being no less than six in each ward; of course, in an emergency only those on the side furthest removed from the point at which the fire originated would be available. The main corridor is provided with fire-resisting sides for a distance of 16 feet from its point of intersection with the building, after which the construction is light and open in character; midway between each block, however, is a baffle or fire-resisting screen intersecting the corridor and rising up above the roof; exits on each side of this screen are provided in the corridor.

CONSTRUCTION DETAILS.

It is not intended to burden the reader with a mass of technical details, a brief outline being all that is necessary for the present purpose. The estimates have been carefully prepared and they will be found a fair approximation of the cost of such a building which may, of course, vary according to local conditions and requirements. It is, however, satisfactory to find that such a building can be erected suitable for the requirements of a hospital or asylum at a cost not exceeding that expended upon some of the most costly temporary buildings upon the old unsatisfactory plan.

Selecting a site.—A level site is best, if possible one with the ground falling away on either side. If on the slope of a hill a well-drained road must be made between the building and the rising ground at a slightly lower level than the building. It is well to have a wide well-drained path all round.

Excavator.—Provision is made in the estimate for excavating for the boiler house and the footing of the several walls and partitions, together with the usual foundations for same. Six inches of cement concrete are to be laid over the entire site and rendered in Portland cement. Splayed wood fillets are taken to be imbedded flush with the top of this floor upon which the wood floor is to be nailed.

Walls and partitions.—The whole of the external and the internal partition walls (except the brick-built tower in the centre of the building) are formed of H iron framing of suitable sections. In the outer walls these are placed at intervals of 10 feet and are 12 feet in height from the floor to the springing of the roof, the intervening spaces being filled with hollow plaster slabs four inches thick either coated on the outside with Portland cement or covered with corrugated iron sheeting. The inside is plastered throughout with asbestic plaster. The iron uprights are also encased in the same material. The several internal partitions are filled in between the uprights with expanded metal lathing and are finished on both faces with asbestic plaster. The cubicles in the night ward are seven feet high and of the same construction.

Roof.—The whole of the roof is formed with H iron ribs, placed 10 feet apart and springing from an L-shaped iron plate, bolted to the top of the uprights, forming an outer wall. In the centre of the building, supported upon light cast-iron columns, is a girder running the entire length to receive the iron trough gutter and inside ends of the roof ribs. The spaces between the roof ribs are filled in at regular intervals with wood purlins; these and the H iron ribs are covered on the under side with one inch patent combined silicate cotton and plaster slabs finished to form the ceiling. The outside is covered with galvanised corrugated iron. The iron columns, centre gutter, &c., are protected by expanded metal lathing and asbestic plaster, the exposed roof framing and tie-rods being covered with asbestos. The external gutters and rain-water pipes are of iron.

Ventilating turrets.—The ventilating turrets shown on the elevation are to be made of iron framing lined inside with

fire tiles made in sections and plastered externally; the cross flues are formed in the same way. The ventilator to the day ward adjoining the lavatory is connected with a brick flue carried up beside the flues of the boilers.

Water-closets.—The division between these and the inclosures to the ventilating lobbies are formed of light iron framing and expanded metal lathing, both sides of which are covered with asbestic plaster. These divisions to the water-closets are seven feet high and are kept six inches from the floor for their better ventilation and cleanliness.

Windows.—The windows are made with solid deal frames with fixed sashes in the lower part but with long fanlights above to open inwards.

Doors.—All internal doors are taken to be of teak, with solid frames, and the doors are two inches thick with solid panels. The external doors are of deal, the upper part being fitted with glass; the frames are solid.

Floors.—The floors in the night wards and day-room are of one and a quarter inch yellow deal nailed on to wood fillets embedded in the concrete. The floors of the passages between the night wards, also those of the lavatories, water-closets, and store-room are finished in Portland cement, as are also those of the boiler-house and cistern-room.

Brick-tower.—This is taken as being of 18-inch work built upon proper footings; above the level of the cistern-room floor the walls are to be 14 inches thick only. Two separate flues are built up from the boiler-house, together with a larger one for ventilating the day-ward.

Boiler-house.—The boiler-house in the basement is reached by a flight of stone steps in the area. The boilers are in duplicate and one or both can be used as required. They are connected into brick flues. A smaller boiler is provided for the supply to the lavatories, baths, and sinks.

Lavatory.—The floor is formed of rolled steel joists filled in between with expanded metal sheeting and concrete, as is also the floor of the cistern-room over the same.

Cistern-room.—8000 gallon (nominal) galvanised iron tanks are to be provided in this upper chamber capable of holding actually 7500 gallons of water. Access to these would be gained through an external trap-door. A two and a half inch iron service pipe leads from these tanks to supply six hydrants—one in each division. These hydrants will be of the pattern described in the notes at the end of this article. The supply of water to the lavatories, sinks, and baths will be from these cisterns, disconnecting cisterns being provided for the water-closets.

In the estimate the plumbing work has been allowed for in conformity with the general principles as to trapping, ventilators, and other details laid down by THE LANCET Special Commission upon Plumbers' Work, as is also the system of drainage which in this instance is made to terminate in a disconnecting chamber outside the building. The roof of the tower is of similar construction to that of the main building; if this tower were roofed with red tiles upon wood rafters an improved appearance would be gained without adding to the cost. From its position this would not be open to any objection on account of fire risk.

The hot-water system.—The circulating pipes from the boilers will pass in channels below the floor line, and here great care must be exercised in order to prevent these channels acting as flues capable of communicating fire from one compartment to another. Where the pipes pass through any partition the opening should be as small as possible and the pipes packed round with silicate cotton or asbestic plaster to fill in any interstices. A similar screen should be fixed round the pipes completely blocking the trench in which they are laid at intervals of 10 feet. These trenches being open at the top would if thus treated be free from draught. The pipes after leaving the boiler would run down the centre of the building, feeding the radiators placed near the column and returning right and left by the side walls to feed those connected with the fresh-air inlets.

Painting.—The ceilings and walls are taken to have two coats of washable distemper and the whole of the internal wood and other work usually painted is allowed four coats of fire-resisting paint. The external wood work, iron, and other work usually done are taken to be painted with four coats of oil paint.

ALTERNATIVE PLAN.

In some respects a more substantial structure and one that in many ways commends itself to favourable consideration is one built entirely of expanded metal. It is not more expensive than the plan just discussed, but it is a form of construction adopted already to a greater or less extent in very many public buildings—hospitals, asylums, factories, and theatres.

Outer walls.—The outer walls would be hollow formed by two faces of this expanded metal lathing attached to angle iron studs placed at intervals of 12 inches along the line of wall; it is plastered on both sides. Such walls are damp-proof, sound-proof, and non-inflammable, while being hollow they afford good protection against extremes of heat and cold.

Roof.—The construction of the roof and, in fact, the building, is in all other respects the same as is described in the last example, or in order to reduce the cost and avoid the use of wood the roof might be formed with fewer principals but with ribs added at more frequent intervals to carry the metal lathing which is suspended from them; to this lathing the plaster is fixed. Above the ribs the corrugated iron roofing is laid. This leaves an air space of some two inches between the two faces. In all other respects the details are the same as in the last example.

There are so many firms now supplying fire-resisting materials that it is difficult among goods of almost equal merit to make a selection, but in order to form an estimate it has been necessary to do so. The hollow plaster specified was first used in Germany where it originated. It has within the last few years been most extensively used in England in hospitals, theatres, and public buildings where protection against fire is essential. Made in slabs of varying thicknesses, measuring 12 inches wide by 6 feet long, it can be sawn and fitted like a board. There are several kinds of metal framing or metal lathing in general use besides the one specified, which, however, is very far from being the worst. The only possible objection to the use of iron or steel as a base for plaster walls is the liability of the metal to rust. When the metal is plastered on both sides there can be but little risk on this account, provided the plaster is not greatly impregnated with acid as is found to be the case with some of the many new patent plasters on the market. It is feasible that with hollow partitions subject to frequent and sudden changes of temperature condensation might injuriously affect the metal where incompletely coated with plaster and this fact should be borne in mind in executing the work and provided for by well painting the lathing before use.

CONCLUSIONS.

The Commissioners in Lunacy regulate the number of patients in a given area by measurement of floor space and air space—viz., 50 square feet floor space for each bed in an ordinary dormitory and 600 cubic feet of air space. In an infirmary the allowance is 66 square feet of floor space and 800 cubic feet of air space per bed. The total cost of the Colney Hatch temporary buildings, which were exceptionally well finished and fitted, is generally understood to have been about £75 per bed. This included lavatories, baths, fire hydrants, and all internal fittings, and they were put up under pressure in a few months, which no doubt added to the cost somewhat. The air space in the dormitories was rather in excess of the requirements, being 765 cubic feet in the night wards and 919 in the infirmary wards, which also tends to make them appear high in price when compared with others. The cost would rather indicate that they were one of the early efforts of the building staff of the London County Council, though of this we have no exact knowledge. Similar buildings were erected at Banstead Asylum but on a less elaborate plan than those at Colney Hatch; these we believe cost some £48 per bed. Contractors give from £20 to £25 per bed as the cost of temporary buildings, this, of course, without any internal fitting, plumbers' work, lighting or heating appliances, unless of the most simple character.

The present plan shows 102 beds with a floor space for each of 83 square feet and with 960 cubic feet of air space per bed. This, though in excess of official requirements for asylums, is probably less than obtains in isolation hospitals. The total cost of the proposed building is £6200. This includes a sum of £400 for plumbers' work and lighting by gas, also a provision of £700 for the supply of hot water and heating apparatus, with £250 for the tanks and fire hydrants. The cost per bed, based upon having 102 beds as shown in the plan, would be £61 exclusive of furniture; as an infirmary, with 162 beds, £49 4*s.*; as ordinary dormitories, with 167 beds, £37 3*s*

It is difficult to arrive at a just comparison between the cost of the Colney Hatch buildings and the building here proposed, and in so doing the following facts must be considered. The number of patients occupying the destroyed

wards is variously given, but it will be within the mark if the number is taken as 328, which multiplied by £75, the cost per bed, equals £24,600. The Colney Hatch Asylum authorities were, however, entitled to have more beds according to the rules laid down by the Commissioners in Lunacy—viz., 290 in the dormitories and 115 in the sick wards, making 405 in all. This would, by increasing the number of beds, reduce the cost to £60 14*s.* 9*d.* per head. The deduction, say, of £10 per head for furniture (an ample allowance), which it is presumed is included in the £75 figure but not in our example, gives a comparative cost for the Colney Hatch building of £50 14*s.* 9*d.* per bed. Upon the same basis, taking one-third of the 167 patients in our example to belong to the infirmary class, we get a reduced number, giving an average of 150 beds, costing £41 7*s.* Taking the lowest form of building at £20 per bed and adding £10 for furniture and a probable £6 per bed for heating, lighting, and lavatories, we arrive at a figure of £36 per bed for the lowest estimate at all approaching the accommodation here proposed.

The result of our inquiries has, to tell the truth, somewhat startled us. We were prepared to find that the cost of building a temporary hospital with any pretensions to being fire-resisting was almost prohibitive. In view, however, of the money expended in some instances upon buildings of the inflammable type, exceeding the amount now found necessary for one of a fire-resisting nature, the reason for their continued use must be sought elsewhere. The error has been in a defective principle of construction. While our county councils have been very properly framing rules for the removal of constructive motes in the eyes of others they have failed to observe the inflammable beams in their own buildings. The name "temporary" has indeed become so identified with this particular class of building that the idea of any new departure has with very few exceptions never occurred to the able men who preside over the public welfare in those matters, notwithstanding the many improvements now in daily use. Will it be too much to hope that recent events will do more than cause some temporary excitement and that no other buildings of a like nature will be put up or be permitted to remain in their present condition in this land where all things are forgotten?

REPRINT FROM THE REPORT OF THE LANCET SPECIAL COMMISSION ON WATER-SUPPLY AND DISPOSAL OF SEWAGE IN COUNTRY HOUSES.

Fire hydrants.—It frequently happens that a house is dependent more or less for a supply of water in the event of a fire upon a lake or stream situated at a lower level; in this case the suction pipes should be laid to the most convenient points at which an engine could work so as to save the delay and confusion likely to arise in laying a hose from a distance. In reference to these pipes the question of friction must not be overlooked. In all cases where the water reaches the hydrants by gravity it is of paramount importance that the valves should be of the simplest construction and unlikely to become set fast through neglect. The means of connecting the hose should also be of such a character that a novice, however agitated, cannot become involved in any difficulty. In the event of a fire everything depends on the promptitude with which the first supply of water is brought to bear upon the outbreak. Every minute is of the greatest value. Wheel valves are liable to become set when not in frequent use, and when this is so some confusion may occur, the operator being uncertain as to which way the wheel should be turned. Time is also lost in turning the wheel before the valve can be completely opened. With a full-way lever cock with a long handle this is obviated. The hose connexion is also much better adapted for private use than the regulation screw pattern. Being a spring connexion it only requires to be pushed into the socket provided in the valve with one hand whilst with the other the lever of the valve is pulled down. The valves and connexions should be fitted in addition with screw threads of a pattern to fit the hose in use in the local fire brigade. Besides the hose connexion shown, which is largely used, there is another patent of very similar construction, but it has a slight disadvantage as the coupling cannot be so readily undone by one man and the latch joint is not quite so complete. In addition to the constant supply to the hydrants which should be fixed both inside and outside the house a supplemental one is sometimes obtained by pumping directly into the hydrant mains, in which case some provision may be necessary to prevent the water from being forced back into the supply tank or by the use of a pressure augmenter.

Hydrant reservoir.—Where a reservoir is essential for a domestic supply it is, of course, a great saving of expense to use the same for the fire hydrants. The objection to this arrangement, however, is that the pressure requisite for the hydrants is very undesirable for the fittings for the domestic supply, necessitating additional strength in the pipes and brass work and frequently causing much noise and vibration when taps are turned off. As to the quantity necessary to be retained for this last purpose it must depend not only upon the size of the house or farm buildings but also upon the facilities that exist for replenishing the reservoir in the event of an outbreak. Where a reservoir is used for the dual purpose the domestic supply should be taken in a separate pipe connected with the reservoir some distance from the bottom; by this means a reserve will always remain in case of fire. The probable quantity required in case of fire is generally taken at 300 gallons per minute for two hours, which would require 36,000 gallons, but this must depend upon the extent of the premises. The height at which the reservoir is fixed and its distance from the house will greatly influence the size of the hydrant mains, the friction in mains of varying diameters and lengths greatly affecting jets of water from the same head. This very obvious fact is one frequently lost sight of and is the cause of much disappointment and useless expense. If dependent upon rainfall the reservoir should be able to hold about one-third of the annual supply. It should not be forgotten that a slight loss of head is caused by every bend in proportion as it is more or less acute. In deciding the size and thickness of iron mains the following points have to be taken into consideration.

1. The quantity of water required per minute. 2. The height of head. 3. The length of main for friction. 4. The height to which a jet of water is required to be thrown for fire hydrants. This last is greatly influenced by the size and shape of the nozzle used, the same head of water giving a jet greatly varying in height with different sized nozzles. It is impossible to offer in a few lines any general rule for guidance, as the several factors vary in almost every instance. With a little care by the help of a few good hydraulic tables the difficulty can be surmounted. The enormous loss of pressure by friction in long lengths of small pipes is a point too often lost sight of.

Looking Back.

FROM

THE LANCET, *SATURDAY*, MARCH 26, 1825.

FOREIGN DEPARTMENT.

ANALYSIS OF FOREIGN MEDICAL JOURNALS.

REVUE MEDICALE—JAN.

Observations on the Hypertrophy of the Brain, by Professor HUFELAND.

On examination of the bodies of those persons who had presented the symptoms of acute hydrocephalus, when little serosity was found in the ventricles, the author observed that the brain had acquired a great increase in volume; that it appeared to fill completely the cavity of the cranium, and that it suffered considerable pressure. Dr. Hufeland inferred from this appearance, that the brain, particularly in children, might be the seat of a too active nutrition, as well as other organs, and therefore acquire a greater developement than ordinary. If in this state the cranium be not prepared for it, in consequence of ossification having advanced too far, this developement of size must necessarily be attended with considerable pressure, and give rise to all the symptoms usually attending acute hydrocephalus. He goes farther than this, and imagines that the serous effusion in the brain is the result of this compression of the organ, and consequently, that the increase of the brain itself is often the cause of the hydrocephalus. He considers these observations worthy the attention of medical men, and that they show the importance of attending to the physical as well as the moral education of children, in avoiding everything that might tend to the too prompt developement of the cerebral mass, as

the premature exercise of the intellectual functions, the use of spirituous drinks, of high seasoned food, &c.; and, on the other hand, that the increase of the muscular action should be encouraged; that cold lotions should be frequently laid upon the head, and that, according to ancient usage, mild aperients should occasionally be given.—*Journal der Practischen Heilkunde.*

Perhaps the Doctor's advice may be useful in Germany, but we believe it would be a difficult thing to find out a case of hydrocephalus occasioned by precocity of intellect on this side of the channel. The stomachs of the dear little ones are more frequently crammed than their brains.

Public Health and Poor Law.

LOCAL GOVERNMENT BOARD.

REPORTS OF INSPECTORS OF THE MEDICAL DEPARTMENT OF THE LOCAL GOVERNMENT BOARD.

On the Prevalence of Diphtheria in the Risborough Registration Sub-district, forming part of the Wycombe Rural District, by Dr. E. P. MANBY.[1]—This report deals mainly with the prevalence of diphtheria during two years, 1900-02, in the villages of Princes Risborough and Monks Risborough in Buckinghamshire. During this period there were only two months in which no cases of diphtheria were notified from the Risborough registration sub-district; in all, 69 cases of the disease occurred among a population of some 6000. Dr. Manby pays special attention to the influence of school attendance in fostering diphtheria. This was particularly evident in connexion with the Monks Risborough school, and it is noteworthy that in June, 1902, when the prevalence of diphtheria had practically came to an end, the children at this school showed an unusually high proportion of "unhealthy throats" when compared with those at other schools in the neighbourhood. Dr. Manby gives the following table showing the conditions of the throat observed by him:—

Name of school.	Number of children present and examined.	Throats unhealthy.	Throats doubtful.	Throats healthy.
Monks Risborough School	56	21	15	20
Princes Risborough National School	69	10	13	46
Princes Risborough British School	74	11	7	56

All these schools, and Monks Risborough school in particular, were much in need of improvement as regards ventilation. Samples of dust taken from the bare brick walls were examined, but no evidence of the presence of the diphtheria bacillus was found. Disinfection of the school buildings appears to have been very inadequately performed and in this and numerous other matters Dr. Manby found the sanitary administration by the Wycombe rural district council extremely unsatisfactory. The inspector of nuisances "had no book on sanitation or sanitary law to show me of more recent date than 1873—two years before the present Public Health Act was passed." The district council appears to pay little heed to the advice given to it by its medical officer of health, Dr. J. D. Dickson, who for many years has done his best, in face of persistent discouragement and of a salary which seems quite inadequate, to obtain improvement in the many insanitary conditions of the district. It is to be hoped that the publication of this report will effect a much-needed change for the better.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8501 births and 4905 deaths were registered during the week ending March 21st. The annual rate of mortality in these towns, which had been 16·6, 16·6, and 17·2 per 1000 in the three preceding weeks, declined again last week to 17·0 per 1000. In London the death-rate was 17·2 per 1000, while it averaged 16·9 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 9·0 in Kings Norton, 9·3 in Hornsey, 10·7 in Wallasey, 11·0 in Stockton-on-Tees, 11·3 in Devonport, 11·4 in Tottenham, and 11·8 in Walthamstow, Warrington, and Rotherham; the highest rates were 21·0 in Wolverhampton and in Preston, 21·4 in Salford, 21·5 in Bootle, 22·2 in Smethwick, 23·1 in Burnley, 24·7 in Merthyr Tydfil, 25·7 in St. Helens, and 28·5 in Wigan. The 4905 deaths in these towns last week included 492 which were referred to the principal infectious diseases, against 453, 501, and 483 in the three preceding weeks; of these 492 deaths 163 resulted from measles, 111 from whooping-cough, 72 from diphtheria, 66 from diarrhœa, 42 from scarlet fever, 26 from "fever" (principally enteric), and 12 from small-pox. No death from any of these diseases was registered last week in Hastings, Bournemouth, Devonport, Burton-on-Trent, King's Norton, Barrow-in-Furness, Halifax, York, or Newport (Mon.); while the highest death-rates from the principal infectious diseases were recorded in Willesden, Tottenham, East Ham, West Bromwich, Grimsby, Wigan, Rhondda, and Swansea. The greatest proportional mortality from measles occurred in Croydon, Tottenham, East Ham, Leyton, Walthamstow, Wolverhampton, Wigan, Manchester, Salford, and Swansea; from scarlet fever in Great Yarmouth and Rochdale; from diphtheria in Hornsey, West Bromwich, and Middlesbrough; from whooping-cough in Croydon, Willesden, West Ham, Leyton, Southampton, Grimsby, Stockport, and St. Helens; from "fever" in Huddersfield; and from diarrhœa in West Bromwich and Grimsby. Six fatal cases of small-pox were registered in Liverpool, three in Birmingham, and one each in Aston Manor, Wallasey, and Hull, but not one in any other of the 76 large towns. The number of small-pox cases under treatment in the Metropolitan Asylums hospitals, which had been five, six, and seven in the three preceding Saturdays, was again seven on Saturday, the 21st inst.; two new cases were admitted during the week, against two in each of the two preceding weeks. The number of scarlet fever cases in these hospitals and in the London Fever Hospital at the end of last week was 1789, against 1851, 1790, and 1798 at the end of the three preceding weeks; 133 new cases were admitted during the week, against 197, 193, and 231 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 271, 251, and 258 in the three preceding weeks, further rose last week to 282, but were 236 below the corrected average number. The causes of 45, or 0·9 per cent., of the deaths in the 76 large towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Bristol, Nottingham, Manchester, Salford, Leeds, Newcastle-on-Tyne, and in 49 other smaller towns; the largest proportions of uncertified deaths were registered in Portsmouth, Birmingham, Liverpool, St. Helens, Preston, and Sunderland.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 17·7, 18·5, and 19·7 per 1000 in the three preceding weeks, further rose to 20·1 per 1000 during the week ending March 21st, and showed an excess of 3·1 per 1000 over the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 14·9 in Aberdeen and 18·3 in Paisley, to 21·6 in Leith and 21·7 in Perth. The 657 deaths in these towns included 32 which were referred to whooping-cough, 14 to diarrhœa, eight to measles, six to scarlet fever, five to "fever," and three to diphtheria. In all 68 deaths resulted from these principal infectious diseases last week, against 59, 75, and 67 in the three preceding weeks. These 68 deaths were equal to an annual rate of 2·1 per 1000, which was 0·4 per 1000 above the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of whooping-cough, which had been 32 and 28 in the two preceding weeks, rose again last week to 32, of which 19 occurred in Glasgow, seven in Edinburgh, and two in Leith. The deaths from diarrhœa, which had been 21 and 12 in the two preceding weeks, rose again to 14 last week, and included seven in Glasgow, three in Edinburgh, and two in Paisley. The fatal

[1] London: Eyre and Spottiswoode, East Harding-street; Edinburgh: Oliver and Boyd; Dublin E. Ponsonby. Price 5d.

cases of measles, which had been 15 in each of the two preceding weeks, declined last week to eight, of which three were registered in Edinburgh, two in Glasgow, and two in Aberdeen. The deaths from scarlet fever, which had been four in each of the two preceding weeks, increased to six last week and included four in Edinburgh. The fatal cases of "fever," which had been two, two, and three in the three preceding weeks, further rose last week to five, of which four occurred in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 92, 97, and 117 in the three preceding weeks, further increased last week to 134, but were 83 below the number in the corresponding period of the preceding year. The causes of 20, or more than 3 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 25·9, 27·8, and 26·6 per 1000 in the three preceding weeks, rose again to 27·7 per 1000 during the week ending March 21st. During the past four weeks the death-rate has averaged 27·0 per 1000, the rates during the same period being 16·6 in London and 19·6 in Edinburgh. The 201 deaths of persons registered during the week under notice were eight in excess of the number in the preceding week and included eight which were referred to the principal infectious diseases, against 14, nine, and 10 in the three preceding weeks; of these, three resulted from diphtheria, two from whooping-cough, two from "fever," one from diarrhœa, and not one from small-pox, from measles, or from scarlet fever. These eight deaths were equal to an annual rate of 1·1 per 1000, the death-rates last week from the same diseases being 1·9 in London and 2·7 in Edinburgh. The fatal cases of diphtheria, which had been one and two in the two preceding weeks, further rose last week to three. The mortality from whooping-cough, from "fever," and from diarrhœa corresponded in each case with that recorded in the preceding week. The 201 deaths in Dublin last week included 37 of children under one year of age and 63 of persons aged 60 years and upwards; the deaths both of infants and of elderly persons considerably exceeded the numbers recorded in the preceding week. Six inquest cases and three deaths from violence were registered, and 68, or more than a third, of the deaths occurred in public institutions. The causes of 13, or more than 6 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Staff Surgeon N. L. Richards to the *Duke of Wellington* for the *Nelson*. Surgeons: S. H. Birt to Haslar Hospital; J. H. Fergusson to the *Duke of Wellington* for Portsmouth Dockyard; W. J. Stitt to the *Bulwark*; W. M. Keith to the *Diana*; F. J. A. Dalton to the *Vernon*; and H. W. G. Green to the *Hibernia* for Malta yard, and P. L. Crosbie for the *Dryad*.

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 1st Edinburgh (City): Alexander Morrison McIntosh to be Surgeon-Lieutenant. Dated March 21st, 1903. 6th Lancashire: Surgeon-Lieutenant W. T. Blackledge to be Surgeon-Captain. Dated March 21st, 1903.

Rifle: 1st London: Surgeon-Lieutenant H. B. T. Morgan to be Surgeon-Captain. Dated March 10th, 1903.

THE NAVY ESTIMATES FOR 1903-04.

The navy estimates, which are over £35,000,000 and show an excess of expenditure of £3,000,000 over those of last year, were last week introduced into the House of Commons by Mr. Arnold-Forster in a clear and very comprehensive speech. The Secretary of the Admiralty, alluding regretfully to the increased and unproductive expenditure, dwelt forcibly upon its having been occasioned by the rivalry and keen competition of other nations. The estimates show an increase in *personnel* of 4600 men over last year. Vote 3 (p. 50) is for medical establishments and services—an estimated cost of £259,000, a net increase for all heads of expenditure of £12,500. The details showing the distribution of the sum estimated for occupy some ten pages. From the statement explanatory of the navy estimates published by the First Lord of the Admiralty at page 11 of that document under the heading of "Personnel" we glean the following points of interest:—

Steps have been taken to organise an improved system of physical training for the men and boys of the fleet, the "masts and yards" training which has served the navy so well in the past having become no longer available. The details of the new exercises and methods of instruction to be employed under the new scheme have been carefully considered and the revised handbook will shortly be issued to the fleet. Amended regulations for the entry of surgeons have been published. The chief alterations are the improved scale of pay for medical officers, charge pay for inspectors-general in charge of hospitals, and also of medical officers in charge of hospital ships, rearrangement of the subjects of examination both for entry and for promotion, increased powers of admitting candidates by nomination of medical schools, colonial universities, &c., earlier promotion to those who have held appointments of house surgeons, and the payment of the fees of medical officers for civil hospital courses. The number of candidates at the competitive examination has improved since the new regulations have been in force and the number of medical officers now on the active list is greater than at any time during the last quarter of a century. A consultative board of eminent medical men has been formed, with the Medical Director-General as president, to decide on the best method of dealing with special questions appertaining to the Medical Department. Amended regulations for the employment of temporary surgeons in case of war or emergency, by which the pay has been materially raised and an equipment allowance granted, have attracted a satisfactory number of candidates. A course of training has been instituted at Plymouth Hospital for sick berth staff probationers and a course of training in m assage at Haslar, with extra pay for those qualified on appointment to a hospital. Revised medicine chests, new field service valise, emergency surgical dressings, Roentgen ray apparatus to ships as well as shore establishments, new metal aseptic operation tables, microscopes, and bacteriological outfits to H.M. ships have been supplied and the trial of various forms of stretchers on board ship have been, and are being, carried out. Steps are being taken to provide an auxiliary sick berth staff from volunteers of the St. John Ambulance Brigade and the St. Andrew's Ambulance Association Corps of Scotland.

THE ARMY ESTIMATES FOR 1903-04.

From the remarks on Vote 2—Medical Services—in the explanatory memorandum of the Secretary of State accompanying the army estimates for 1903-04 we find that there is a gross decrease in the vote for the medical services (Vote 2) of £495,000, but an increase on normal services of £25,000 due to provision for additions to the medical and nursing services of the army. The total of the army estimates amounts to £34,245,000, which, although less than that of last year, is still some millions in excess of the normal estimate, but this was only to be expected in the circumstances. The number of men to be voted is 235,761, exclusive of the Indian establishment, reserves, yeomanry, militia, and volunteers. The estimated pay of the army medical service (p. 39) for 1903-04 is £345,000, being a decrease of £15,500 on last year's estimate. The pay of civilian medical practitioners is £42,000, which shows a decrease of £224,100 on 1902-03, and on the cost of medicines, &c., there is a saving of £135,000. Provision is also made in Vote 2 for the medical services of the China Expeditionary Force and the Somaliland Expeditionary Force. There is an addition of 40 officers to the Royal Army Medical Corps and of 112 nurses to the nursing service, and the number of non-c mmissioned officers and men of the Royal Army Medical Corps has been considerably increased. On p. 40 of the estimates setting forth the home, colonial, and Indian medical establishments, we notice that the sum of £2500 is estimated as the amount required for payments to dentists in London and elsewhere and for the civilian members and clerical staff of the Advisory Board. At p. 86 and 87 details of the estimated amounts required for the Army Medical School, Netley, and for the Medical Staff College are given, amounting to £7670 for the former and £9200 for the latter. The estimate for the Army Sanitary Committee now only amounts to £105. At p. 160 *et seq.* (Appendix 6) will be found a detailed statement of the medical establishments for army corps, military commands, and districts.

THE RUSSIAN ARMY MEDICAL DEPARTMENT.

In 1901 the number of trained soldiers in Russia available for service in the various arms was authoritatively estimated at 4,566,000, inclusive of officers, 1,414,000 men constituting the regular army and the remaining 3,152,000 the militia and reserve. The number of recruits incorporated during the year was 308,440, or about one-third of the available youths, of whom no fewer than 603,131 were medically examined. The minimum height allowed in the infantry was five feet, while the period of service with the colours, although nominally five years, was practically not more than four years. After his liberation from the active list the Russian soldier has to serve in the reserve until he is 43 years of age, but apparently his training during this long stage is limited

to two periods of six weeks each as a maximum. The officers of the medical department of the army are separated into two distinct categories, combatants and non-combatants, the former being drafted from the general list, while the latter comprise medical men, apothecaries, and veterinary surgeons. Relative rank is strictly defined in accordance with a hierarchical scheme known as the "Tchin." The chief medical officer of the army ranks as a lieutenant-general and also as a privy councillor, but his professional title is "inspector-general." Occupants of the next grade below rank as major-generals and also as councillors of state, their technical description being "inspectors of districts." In all official documents a medical officer's civil designation is invariably cited—as, for example, "District Inspector, Councillor of State, Dr. X. Y. Z. is appointed, &c." The grade of inspector entitles the holder to rank as a noble as well as to be addressed as "Excellency." On appointment a young medical officer enters the ninth class of the Tchin with the relative rank of captain, his corresponding civil nomenclature being "titular councillor." Four-fifths of the medical recruits come from the Academy of Military Medicine at St. Petersburg, the balance being obtained from the other state faculties. A youth enters the academy at the age of 17 and after two years devoted to the general sciences spends three more in medical study. Then, provided he can pass for his medical degree, he becomes eligible for the army, but although given the position of a captain his pay and allowances are those of a subaltern until he has served for four years. The seven most meritorious army candidates passing out of the academy are allowed to prolong their studies for three years, when those who have made good use of their opportunities are granted the means of completing their education in foreign schools during a further triennial period. On their return these industrious young men are rewarded with the best posts in the department. The pay of a Russian medical officer on appointment is £85 per annum. After four years he receives £120, and when promoted major £280. As colonel the emoluments come to about £450 yearly, and in the inspectorial rank to between £680 and £800. Only about half of the academy students enter the army, the number varying annually from 60 to 80. Evidently this contingent is totally inadequate for the medical requirements of such a gigantic army as the Russian, nor does it appear that in war time the number of medical officers could be effectually supplemented from among the civil practitioners of the vast empire whose strength is said to be inferior to 15,000. It was with a view to meet the difficulty that the Russian army authorities decided to organise schools where *feldschers* or medical subordinates could be trained to act as assistant surgeons. There are at present five of these establishments where boys aged from 13 to 17 years receive medical instruction during four years. For the most part they are the sons of soldiers, and on all sides the testimony as to their intelligence and efficiency is highly satisfactory. In time of war it is calculated that no fewer than 10,000 of these *feldschers* would be required. We are indebted for the foregoing interesting notes to an article in the *Archives de Médecine et de Pharmacie Militaires* by Professor Frédéric Antony, who concludes his exhaustive paper in the following suggestive terms: "The medical inquiry which followed the war in the Balkans seems to have proved clearly that the systematic exclusion of medical officers from administrative matters created numerous misunderstandings; that their advice was not always listened to, especially at the base and in zones remote from the directing authority; and that many times the vexatious results of an incompetent hospital administration were attributed by their authors to the medical men whose recommendations had been neglected."

BAD TEETH AMONG ARMY RECRUITS.

In the House of Commons on March 18th Mr. Weir asked the Secretary of State for War, in view of a statement contained in the recently issued report of the inspector-general of recruiting to the effect that in the reports from manufacturing districts, stress was laid upon the number of men rejected for bad teeth, whether he would state the percentage of men who were rejected for this cause during the year under review. Mr. Brodrick replied that the number of men rejected for bad teeth in 1902 was 4558 and the ratio per 1000 inspected was 52·03. This number is nearly double the figures for 1901.

Correspondence.

"Audi alteram partem."

A THEORETICAL VIEW OF THE CAUSATION OF CANCER.

To the Editors of THE LANCET.

SIRS,—The object of the present letter is to point out what seems to me the logical and scientific conclusion to be drawn from recent research as to the direction in which the solution of the grave problem of the etiology of cancer is to be found and to do this as briefly and as simply as possible. A careful consideration of all the known causes of disease has hitherto failed to establish any one of them as the specific and undoubted cause of cancer, and as the result of the great mass of detail embodied in the researches of those who have been working at the problem only two views can be said to have at the present moment much claim upon scientific attention. Perhaps it would be more correct to say that only one view is attracting much notice—namely, the existence of a parasite or micro-organism which is the specific cause of the malignant epithelial growths known as cancerous. The other recent theory—that of Dr. John Beard of Edinburgh University, which he communicated to the pages of THE LANCET a few months ago[1]—has met with a singularly cold reception and has provoked practically no criticism. Nevertheless, there can be no doubt that Dr. Beard's theory is one that will have to be faced and inquired into further, though there can be few persons indeed who have the necessary abilities and embryological knowledge to undertake such a formidable task.

Briefly, then, the present position is this. The whole list of the known factors in the production of morbid conditions has been scrutinised in vain to find any particular agency which can be said to be the specific cause of cancers or other tumours. From the mass of facts known to clinicians and pathologists some few factors there are which evidently have some bearing upon the problem. Amongst these are the following: (*a*) the occurrence of cancer at certain special periods of life; (*b*) the influence of sex in determining the parts of the body affected; (*c*) the occurrence of cancer in glands fully developed physiologically; (*d*) the frequent occurrence of cancer in some families; (*e*) the influence of long-standing local irritation; (*f*) the effect of previous disease or local injury; (*g*) the effect of particular diets; and (*h*) the possibly infective nature of the disease.

The importance of each of these has been urged at different times by various observers, and the mere mention of such widely varying factors in itself seems to point to the conclusion that in none of them is to be found the sole specific cause of the disease. All of them—except the last—have therefore been put aside as not furnishing full explanation and investigators have turned their attention to other more promising fields. In these circumstances it is most natural, considering the enormous results that have been obtained in other diseases, that many are looking for the solution in the discovery of a specific parasite or micro-organism. It is no part of my present purpose to discuss the researches which have been already published in this direction. Whether the growths obtained by Plimmer and others are to be regarded in any sense as integral parts of the cancer from which they were obtained, or whether the appearances in cancer cells are due to degenerations or true parasites, does not affect the present point. The fact remains that the line upon which most research is now being done is the bacteriological line, presumably upon the supposition that a specific vital cause may be found for cancer, as has been demonstrated for so many other conditions.

The only other view now being urged is what we may term the "germ-cell theory." In this country this view was, as I have said, set forth in THE LANCET last year by Dr. Beard. It is by no means an easy theory to understand thoroughly, for the simple reason that it depends upon the author's views of embryology, which, to say the least, are not familiar to everyone. But as I understand it Dr. Beard holds that cancers—and I think he now extends the view to

[1] THE LANCET, June 21st, 1902, p. 1758.

other tumours—are due to certain products of the segmentation of the fertilised ovum. Certain cells, as the result of segmentation, are set aside to form the sexual cells of the next generation—that is, of the developing embryo. Some of these cells in early development wander into abnormal situations—become, in fact, aberrant germ cells. This part of his view is not a theory, it is a fact which has been observed in embryos of lower vertebrates, these particular cells being easily recognised by their special characters and by special staining methods. The theoretical part of the view is that these cells occur in mammals and lie dormant in those situations into which they have wandered, retain their capacity for developing into certain tissues, and at some later period of life, which in the case of cancer is, as a rule, between 40 and 60 years of age, take on growth and form cancers. I am not aware that these cells have been observed in mammals; there are special difficulties in the way which need not be stated here, but it is argued from analogy that the same process most likely takes place in mammals as in some other vertebrates.

Here, then, are the two views which at present may be said to hold the field, the one theory assuming that cancer may be due to a parasite and the other that it is due to aberrant germ cells in the embryo. The fact that the latter view has received but little attention is no argument against its validity. Nothing could very well be more divergent from each other than these two explanations of the cause of cancer and the most striking point to the mind of the present writer is that the advocates of neither view seem to have given a thought to the theory of their opponents. As far as I am aware the bacteriologists have not given any indication that in their opinion Dr. Beard's germ-cell theory can have any relation to a parasitic cause of cancer, nor did Dr. Beard in his latest paper on the subject (read before the Royal Society of Edinburgh on Feb. 16th, 1903) refer in any way to the possible action of a parasite upon his pre-existent germ cells. It is this striking omission on both sides which is my apology for the present letter.

We are accustomed to divide the causes of disease into two great groups, the predisposing and the exciting causes. We recognise that some morbid conditions are more liable to affect some individuals than others, because we say they have a predisposition or a predisposing cause acting on them, rendering them more susceptible. In other diseases we recognise that an exciting cause alone is sufficient to produce disease provided that the species of animal in question is not immune to that particular condition. But susceptibility in itself must be regarded as a predisposing cause, though the term is generally used with regard to more restricted factors, such as age, sex, family, &c. Is it not possible, then, that the secret of the cause of cancer is wrapped up in the discovering of an *exciting cause* which is able to act upon a *predisposing one*? In other words, is it not possible that both the embryologist and the bacteriologist are right, although they themselves do not see the necessity for each other's view? How can a parasite conceivably give rise to growths of such special types as we find in cancers unless there be a pre-existing cell or tissue upon which its peculiar influence may be exerted? But if Dr. Beard is correct in supposing that in mammals there are dormant germ cells which retain the capacity of development in special circumstances it is equally possible that the bacteriologists may discover the special irritant necessary to start the growth. Or, as seems quite as likely, there may be many exciting causes, of which a parasite may be one, which have the power to initiate growth in a pre-existent germ cell.

It therefore seems to be possible that the cause of cancer will be found to depend upon two sets of factors—one a predisposing cause and the other an irritant acting upon the former. Whether these two factors are to be identified with the germ cells and a specific parasite remains to be proved. More probably there will be found to be *a germ cell which can be impelled to growth by more than one exciting cause*. In any case, to the mind of the writer a conception of the etiology of cancer which does not recognise the necessity of both a pre-existing cell of a definite type and an exciting cause which makes that cell take on deferred growth is an inadequate view. In the interdependence of these two aspects of morbid etiology the true cause of cancer will in all probability be found.

I am, Sirs, yours faithfully,

GERALD R. LEIGHTON, M.D. Edin.,
Professor of Pathology in the Royal (Dick) Veterinary College.

Feb. 17th, 1903.

THE EFFECTS OF BORIC ACID AS AN INTERNAL MEDICINE.

To the Editors of THE LANCET.

SIRS,—Mr. Reginald Harrison's letter in THE LANCET of March 21st, p. 836, will be welcomed by all who, like my-self, advocate the use of moderate quantities of boron preservatives in articles of food, such as butter and potted shrimps, which are liable to decompose rapidly. While deprecating the use of boric acid he advocates the use of boracite, which, he tells us, is a borate of magnesium containing 62·5 per cent. of boric acid (anhydride), both as a medicine and also as an article of commerce for preserving such foods as he has mentioned. Mr. Harrison is perhaps not aware that in making an analysis of a food containing boric acid it is not possible to tell whether the acid was added free or in combination, or, if the latter, with what bases it was combined, and that whether boric acid or boracite was added the analyst would only be able to recognise the presence of so much boric acid. It is exceedingly difficult to understand how the effect of a few grains of boric acid on digestion can be so different from that of a few grains of boracite as Mr. Harrison believes it to be, because the hydrochloric acid in the gastric juice must quickly liberate boric acid from the borate of magnesium. I should like also to point out that the preservative generally used for potted shrimps is a mixture of boric acid and borax known in the trade as glacialine, and that it is probable that the alkalies present in most organic substances preserved by it are sufficient to neutralise the free acid, which is at most exceedingly feeble. That Mr. Harrison has suffered from indigestion after partaking of potted shrimps and other articles containing boric acid is no proof that the preservative was the cause of his trouble. Has Mr. Harrison found that it caused indigestion when mixed with his ordinary food? If he has we may have to admit that it does not suit his digestion, but we shall have also to admit that his digestion is unlike the digestion of the vast majority of persons, in whom there is overwhelming evidence to show that no appreciable harm results from the ingestion of considerable amounts of boric acid, even when continued daily for several months at a time.

I may sum up these remarks by saying that Mr. Harrison, by advocating the use of boracite, admits the principle of the use of a boron preservative, that analysts do not distinguish between boric acid and borates in a food, that it is doubtful whether boric acid in the free state is ever met with in the majority of the foods he has mentioned, and finally that to the best of my knowledge Mr. Harrison is the first who would forbid the use of boric acid as a preservative while allowing the use of a borate.

I am, Sirs, yours faithfully,

THOMAS R. BRADSHAW, M.D. Dub., &c.,
Physician to the Liverpool Royal Infirmary.

Liverpool, March 21st, 1903.

THE RISE OF BLOOD PRESSURE IN LATER LIFE.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of Feb. 14th, p. 472, there appeared together letters from Dr. Harry Campbell and myself, in one of which, my own, the mean pressure in the capillaries was spoken of as a considerable amount—say, 50 mm. Hg; in the other, Dr. Campbell's, as virtually *nil*. I did not trouble you with any explanation of this apparent paradox, as I thought the reconciliation of the two points of view would be perceived by physical readers. But as in his very interesting letter in THE LANCET of March 21st, p. 835, this accomplished physician returns to the subject may I point out, after the fashion of the landlord of the Rainbow, that we are both right and both wrong? Dr. Campbell was, and is, considering the pressure in a (any *one*) capillary, I was considering—as I think I said?—pressure on the capillar*ies*—i.e., in the capillary system. The capillary system, and it is with the arborescence as a whole, not with individual twigs, that the heart is concerned,—the capillary system may be imagined in sum as a vascular area of a certain collective diameter and capacity, and a rough calculation of this area, diameter, and capacity can be made and the probable mean pressure in it

calculated on this basis. The pressure in any one capillary is, of course, infinitely small.

Dr. Campbell says he cannot think the organism would "self-inflict ..... a wearing-out of the heart and arteries without any countervailing good" (when it has the means of self-adjustment of pressures). Well, we have come to think many things which at first are difficult, and this difficulty applies still more forcibly to Sir Richard Douglas Powell's vaso-motor hypothesis which may turn out, of course, to be the true one, though I "find it difficult to think so." All I will say at present is that, as a matter of clinical and anatomical experience the heart and arteries do "wear themselves out" after a period of compensatory dilatation-hypertrophy, and this is the chief matter I have urged so long against the French and German assertions that arterio-sclerosis (of the kind I now contemplate) is "a cardio-arterio-sclerosis"—"a cardio-arteriopathy," and the like—names positively misleading if the machine, as engineers say, is "self-strained." After such persistence in this clinical doctrine I am amply rewarded by the adhesion of Dr. Campbell, Sir William Broadbent, and, I think I may add, of Sir Richard Douglas Powell also. Where we may differ is now only as to the mechanism itself, and I repeat once more that my suggestion herein as to viscidity is a mere suggestion which does not amount to hypothesis, still less to "theory," as someone put it. In favour of my surmise I learnt from Dr. Bodington in his thesis for the M.D. degree of this University (Feb. 28th, 1903) that the injection of nucleo-proteid into the circulation causes a manifest thickening of the blood; in some of his experiments with these products the blood became so "viscid" that it was difficult to draw it from the vessels of the still living animal.

Dr. Campbell is evidently of opinion, as I was, that Dr. H. Oliphant Nicholson's letter contained many statements which, if true, are very important, but that they were stated without indications of proof. I wrote to Dr. Nicholson to put this criticism before him. He was so kind as to send me in answer a long and very interesting letter which if it did not contain, as it scarcely could, the proofs of his several propositions, yet proved most indisputably his competence to express an opinion and set forth a large amount of careful experiment upon which they were made.

I am, Sirs, yours faithfully,

T. CLIFFORD ALLBUTT.

St. Radegund's, Cambridge, March 24th, 1903.

PS.—I cannot close without reference to the importance of the criticism by my friend Dr. E. H. Colbeck (in THE LANCET of March 21st, p. 793) of my interpretation of angina pectoris. His paper will have my careful consideration in my Cavendish Lecture next June.

THE VIRCHOW MEMORIAL.

To the Editors of THE LANCET.

SIRS,—Allow me to inform through the medium of your columns all those who have kindly contributed to the Virchow Memorial that the list of subscriptions was closed, as intended, on Feb. 28th, and that the total after deduction of the small expenses for stationery amounts to £265 11*s.*, contributed by 122 subscribers. A cheque for that amount has been sent, together with the list of the contributors, by the honorary treasurer, the Right Hon. the Lord Avebury, F.R.S., to the treasurer of the Berlin committee, Herrn Geheimen Kommerzienrath A. von Mendelssohn-Bartholdy. The chairman of the Berlin committee, Professor Dr. W. Waldeyer, has addressed to me a letter in which he expresses in the name of the Berlin committee his very sincere thanks to all those who in Great Britain and Ireland have contributed to the memorial. He winds up by saying that England had again shown that she knew how to honour genuine science and its representatives.

I am, Sirs, yours faithfully,

FELIX SEMON,
Honorary Secretary.

Wimpole-street, W., March 23rd, 1903.

GLASGOW AND WEST OF SCOTLAND COÖPERATION FOR TRAINED NURSES.

To the Editors of THE LANCET.

SIRS,—I inclose a copy of the eleventh annual report of the above institution, containing the new constitution and rules which were unanimously passed at a special general meeting of members held in the Religious Institution Rooms, Glasgow, on Feb. 23rd. The coöperation was started in 1892, the necessary funds being contributed by members of the public who were anxious to provide an association of fully trained nurses with Glasgow as a centre. The expectations of the founders have been more than fully realised and now the nurses on the staff number close upon 200. In view of the rapid development it became necessary to recast the original constitution and rules. This matter has occupied the careful attention of the executive committee during the past year. With the aid of their honorary solicitor, Mr. William Brodie, the committee drew up the revised constitution and rules which were submitted to the annual meeting of the coöperation in November of last year. The confirmation of the constitution was, however, delayed in order that all the nurses on the staff might have an opportunity of more fully considering its terms. Since the annual meeting a copy of the new constitution and rules has been sent to all the nurses on the staff, as well as brought before a meeting of representative nurses, at which all the details were explained by the honorary solicitor. The nurses have without exception accepted the new constitution and many have expressed themselves as greatly indebted to the executive committee for the trouble it has taken in connexion with the matter.

Having regard to some general criticism which has been passed on the constitution and rules as now adopted, I think it right to note the following: 1. The rights of nurses who are members of the coöperation have in no way been altered by the new constitution and it is not the case, as has been asserted, that the position of the nurses has been reduced to that of servants of the coöperation. They, as formerly, obtain employment through the coöperation and are paid by those to whom they render service—namely, the public. 2. Among various usual powers has been inserted one enabling the coöperation if need be to solicit and to collect subscriptions, but the inclusion of this power does not thereby, as has been asserted, reduce the coöperation to the position of a charitable institution. As above noted the coöperation was founded by contributions which have largely enabled the executive committee not only to finance the working of the association, but also to purchase the "home" in Sardinia-terrace, which has been considerably added to since its acquisition. The premises have been refurnished and refitted for the nurses' comfort and convenience and a "holiday home" at the seaside has also been established where the nurses can recruit. It is thus obvious that through the original capital subscribed by the public the coöperation has been relieved of house-rent and the working expenses which are contributed by way of commission by the nurses have accordingly been considerably reduced. The benefits derived are enjoyed solely by the nurses, who have expressed themselves as being very grateful to the ladies and gentlemen who by service on the executive committee have contributed so largely to their welfare and comfort. In conducting the affairs of a coöperation of which the nurse members are necessarily for the greater part of the year scattered all over the country, it is essential that the members of the executive committee (which is elected annually) should be armed with wide and extensive powers. All those who have been interesting themselves in the coöperation are gratified by its steady progress and increasing efficiency and it has now become an institution conferring not only substantial benefits on the trained nurses who form its staff but also on the sick who require their services.

The standard required for admission is exceptionally high, no nurse being admitted who has not three years' continuous and systematic training in a recognised general hospital where the education of nurses is attended to and a qualifying diploma granted after examination. No monthly nurses can now join who have not also general medical and surgical training the same as the other nurses. In this respect probably the coöperation is not excelled by any similar organisation of the kind.

I am, Sirs, yours faithfully,

DAVID NEWMAN, M.D. Glasg.,
Chairman of the Executive Committee.

Glasgow, March 24th, 1903.

SUGGESTION, AUTO-SUGGESTION, AND CHRISTIAN SCIENCE.

To the Editors of THE LANCET.

SIRS,—The few scattered prosecutions of so-called Christian Scientists in this country for attempting and failing to treat disease and thus allowing the patients under

their charge to die without any attempt at medical treatment have not as yet aroused public attention owing to their scarcity. But that the movement is spreading in this country cannot be doubted.

To the public at large this so-called "science" would be of comparatively little interest were it a mere religion pure and simple. Its interest—and, I may add, its danger—lies in that it professes to be much more than a religion: it claims to hold the keys of health, to check disease, and to place the patient under treatment on the high road to health, not by drugs or any physical method of treatment, but simply by a sustained effort of the will. To us with all the elaborate mechanism of modern science at our disposal, and the painfully accumulated clinical experience of centuries at our back, this may seem the veriest charlatanism to be dismissed on *a priori* grounds as a palpable absurdity. But we find—not in this country but in the "States"—that there are over one million people bold enough to claim from their own experience benefit from this method. Their statements are a factor whose influence on public opinion cannot be ignored; and a brief account of the methods of "Christian Science" may therefore serve some useful purpose. To do this I must first describe the phenomena of "suggestion" and "auto-suggestion." Every hospital resident knows that when a patient for any reason has been treated with sleeping draughts or hypodermics of morphia for some little time he can readily be made to go to sleep by feigning to give him his usual draught, substituting any harmless placebo or giving a hypodermic of sterilised water instead of morphia. The idea of sleep is induced in his mind by the performance and he rapidly quiets down into natural slumber. This and many cognate phenomena come under the head of "natural suggestion."

An analogous but more powerful form is what is known as "hypnotic suggestion." It is not much practised in this country and need not further be referred to. "Auto-suggestion," as its name would imply, is where the idea emanates from the patient himself. He has made up his mind that certain things will happen and within limits they do. Any practitioner who has seen cholera abroad will tell you that when an epidemic starts those who are most afraid of taking it almost invariably do. The explanation, of course, is that the vibrios are already present in the intestines (just as one often finds the diphtheritic bacillus in swabs from the throats of healthy people during an epidemic of diphtheria), but the resistance of the tissues has been lowered by fear and the individual who might otherwise have escaped becomes a victim under the influence of auto-suggestion.

Bearing these two phenomena in mind the methods of the "Christian Scientist" are easily explained. To take a concrete example. A Christian Scientist gets a headache. Instead of looking for sympathy he sits down calmly and repeats a formula something like this: "I have no pain. There is no pain. I feel no pain. There is no such thing as pain. Nothing is real but mind. There is no pain." By keeping his mind fixed on this one idea he states that presently the pain is gone. Now if one comes to analyse his method it is at once seen to be one of pure "auto-suggestion." In a similar manner by "natural suggestion" one can work on the feelings and beliefs of others. Hysterical aphonia, imitative chorea, &c., can readily be treated and, in fact, are treated regularly in everyday practice by the exercise of a strong will over a weaker. The success of many a practitioner is largely due to his hopeful manner with his patients. He sets them thinking, not of how ill they are, but of how soon they will get better. And this is exactly the method of the Christian Scientist. He works by "diverting his mind from unhealthy channels and compelling it to travel in healthy ones." In the jargon of his religion he calls it "right thinking" in contra-distinction to "wrong thinking," which is the origin of all unhappiness and disease according to his view.

Backed by the glamour and mystery of a new religion it is obvious what a powerful weapon he wields against imaginary ailments and all the protean forms of hysteroidal and hypochondriacal fancies. But it is here the danger begins. He is not content to stop here. He claims to be able to cure all diseases by this method. But, unfortunately, the most powerful forms of suggestion will not reduce a strangulated hernia or all the thinking in the world stop the insidious course of the tubercle bacillus. As long as the Christian Scientist contents himself with treating the thousand-and-one small ailments which affect the mind rather than the body he serves a useful purpose, for faith based on any foundation, no matter how dubious, is always powerful. But when he professes to cure diseases of which he can have no practical knowledge—diseases in which there is some distinct pathological lesion—he immediately becomes a danger to the State and a person to be avoided as one would the plague.

I am, Sirs, yours faithfully,

March 21st, 1903. J. JOHNSTON ABRAHAM.

SHORTENING THE SACRO-UTERINE LIGAMENT IN THE TREATMENT OF PROLAPSUS UTERI.

To the Editors of THE LANCET.

SIRS,—Mr. E. Stanmore Bishop in his admirable paper on shortening the sacro-uterine ligaments in the treatment of prolapsus uteri in THE LANCET of March 14th, p. 725, has most courteously alluded to my paper read before the British Gynæcological Society upon the same subject. In theory his operation and mine are identically the same, but in practice, as he points out, they differ in one or two important points. Mr. Stanmore Bishop does not suspend the uterus at all to the abdominal wall; his objection to this is the fact that if the uterus is so attached by "ventrofixation" serious difficulties may arise in the future. Now in my opinion "ventro-fixation" is a misnomer; it should be termed "ventro-suspension," as in my experience I do not think it possible to fix the uterus absolutely to the abdominal parietes without the fundus is fastened directly to the recti muscles, but so long as it is only attached to the peritoneum no fixation will take place, as it will be found, as I have proved, that the attachments are always half an inch or more long and composed solely of peritoneal tissues which readily stretch. The importance of this attachment is, I think, that if the sacro-iliac ligaments are shortened without some parietal attachment to the fundus there is considerable risk of the uterus becoming strongly anteverted and to the patient in consequence being subject to all the inconvenience appertaining to this condition.

The *rationale* of the operation is readily understood if one considers that the uterus is a motile body suspended by the lateral ligaments and maintained in its normal antero-posterior position mainly by the sacro-uterine ligaments. Should these ligaments become weakened the uterus has a tendency to revolve backwards on its axis, the broad ligaments, thus throwing more and more strain upon their posterior attachments which, continuing to elongate, eventually drag the fundus completely round, causing retroversion. The uterus, now lying in the axis of the vagina and the supports from above being weakened and elongated, gradually becomes more and more prolapsed and if the perineal supports are weakened or perhaps non-existing it is readily seen that there is nothing to prevent the whole organ prolapsing. The only natural way of restoring the organ to its normal position is unquestionably to repair those attachments which in its normal state keep it in position and the chief of these unquestionably are the posterior attachments or those which suspend the os and cervix posteriorly and which tend to keep the uterus in the antero-posterior position; this can only be done by passing a couple or three sutures deeply into the tissues on each side of the rectum in the position of the sacro-uterine ligaments, bringing these forward so as to pass through the peritoneum and subperitoneal tissues in two or three places, and catching the cervix of the uterus; the two ends are then tied firmly. The elongated and sacculated pouch of Douglas is by a darning stitch puckered up and a firm suspensory ligament formed. In many cases colpo-perineoplasty will have to be performed, but even without this, if sacro-uterine suspension be properly performed, I am convinced that the uterus may be retained in its proper position. I am, Sirs, yours faithfully,

FREDERIC BOWREMAN JESSETT.

Brook-street, W., March 23rd, 1903.

A NEW ILLUMINANT FOR THE FUNDUS OCULI.

To the Editors of THE LANCET.

SIRS,—The large number of red rays reflected from the fundus of the eye when examining it by the ordinary light tends to mask some of the detail; this is especially the case

in disease of the retina and with the fine terminations of the arteries. In microscopy it is well known that the insertion of a Gifford's screen between the light and the section adds greatly to the detail by absorbing the red rays where structures have been stained red. By the kind courtesy of the Westinghouse Electrical Company I have been able to examine a number of fundi, both normal and diseased, by means of the mercury vapour lamp, the light of which is produced by allowing a direct current to flow through a vacuum containing mercury, from a platinum to an iron electrode, the resistance in the tube having been first broken down by a spark of high tension. This light, when examined spectroscopically, is seen to be deficient in red rays, being very rich in blue and violet. The light, although brilliant, is diffuse and produces an "after image" of very short duration. On looking at the fundus by this light the "background" appears pale green instead of the usual red; the vessels appear purple, standing out with unusual distinctness; the arteries being the same colour as the veins can be traced to their finest ramifications. The choroidal vessels are of a deeper purple and over the whole the retina can be seen glistening, being especially well marked along the arteries and veins. The optic disc appears with a white centre and green edges. This illuminant ought to be of considerable utility in the differential diagnosis of retinal and choroidal disease, since the perspective of the retina, choroid, and sclera is very clear. Although the lamp in its present form is hardly suitable for ophthalmoscopic work, alterations could be easily made for this purpose. A somewhat similar effect can be produced by using an arc lamp and screening off the red rays, but the same definition and detail cannot be obtained as with the mercury vapour lamp.

I am, Sirs, yours faithfully,

M. S. MAYOU, F.R.C.S. Eng.,
Chief Clinical Assistant to the Royal Eye Hospital.

March 20th, 1903.

PROFESSOR GRASSI'S RECENT PAMPHLET.

To the Editors of THE LANCET.

SIRS,—Professor Grassi has recently published a pamphlet entitled "Documenti riguardanti la storia della scoperta del modo di trasmissione della malaria umana" which I find he has dedicated to me. The work is of a polemical character. Lest from the fact of the pamphlet being dedicated to me it might be supposed that I indorse the views therein expressed, I beg to say that in many instances I do not, and, moreover, that I was not consulted about the dedication.

Yours truly,

Queen Anne-street, W., March 20th, 1903. PATRICK MANSON.

ERRATUM.—In the letter headed "On the Problem of Glycosuria and Diabetes" and bearing the signature "Rusticus," published in THE LANCET of March 21st, the word "maintains" in the first line of col. 1, p. 839, ought to be *mentions*.

THE LONDON LICENTIATES' AND MEMBERS' SOCIETY.—A meeting of the members of this society was held at the rooms of the Royal Medical and Chirurgical Society, Hanover-square, W., on March 10th. The chair was taken by Dr. W. Bezly Thorne who in addressing the meeting pointed out that there were two courses before them—viz., to approach the University of London with a petition that men holding the diplomas of the Conjoint Board should be permitted to present themselves for the final examinations without matriculation; and, secondly, to approach one of the provincial universities to allow such men to enter for the pass examination for their M.B. degrees. Mr. Elliott Blake spoke upon the various injustices suffered by London "Conjoint men" and was of opinion that the society should be continued as a permanent one. Dr. A. Douglas Cowburn did not think that any good would result from a petition to the University of London. Mr. F. W. Collingwood gave reasons for thinking that affiliation with certain provincial universities would be impossible and proposed that a petition should be prepared for presentation to the University of London. An executive committee was appointed for this purpose and it was also decided that the society should become a permanent one with an annual subscription of 5*s.* to be forwarded to the secretary, Mr. F. C. Langford, 142, Peckham Rye, London, S.E.

THE FOURTEENTH INTERNATIONAL CONGRESS OF MEDICINE, MADRID.

(FROM A SPECIAL CORRESPONDENT.)

THE JOURNEY.

THERE are two routes by which Madrid may be reached—the longer but more comfortable and healthy journey by sea to Lisbon or Oporto, and the overland route through Paris. The latter course is most likely to be adopted by busy men and in general the Sud Express will be the train chosen. Now, the Sud Express is as ill-contrived a train as any so-called *train de luxe* can well be. In the first place it has no direct communication with any train from London; the traveller must either leave London in the morning and spend from 15 to 18 hours in Paris, or he must travel all night by train and boat in order to reach Paris at an uncomfortably early hour in the morning and will then have to wait several hours for the Sud Express to start. It must also be noted that places in this train should on ordinary occasions be booked at least 24 hours before starting, as the trains are constantly full, and those who visit some other Spanish towns after leaving Madrid on their return should bear in mind that a Spanish telegram may need 24 hours to travel 500 miles. Travellers by the Sud Express have to change into a Spanish train at the frontier and the change is for the worse, for the French train, though dusty and ill-ventilated, is not overcrowded, as the seats are all numbered. Luggage should be in a handy form, as it is safer in the carriage with the traveller, and no charge is made for excess of weight if it is taken in the carriage—only 66 pounds are allowed free and portmanteaus have been cut open before now in the luggage vans. The sleeping-cars in the Sud Express are divided into compartments, each containing four narrow bunks, one above and one below on each side, with just enough space in the middle for one man to undress. There is no place in which to secure money or jewellery and the only means of ventilation in this small space occupied by four persons is the window, for the door opens into the corridor. There are dining-cars in this *train de luxe*, but the food is not first-class and the attendance is insufficient.

There is but little in the scenery along the route to interest the traveller, except glimpses of towns the names of which are familiar to him since his school days, as the most beautiful country—i.e., the Pyrenees—is passed during the night on the way south, but on the return journey there is very much to admire. The Sud Express is the best means of returning to England for the sake of the scenery through which the line passes and of the quaint sights from the windows of the train such as a woman and a girl ploughing with a yoke of oxen, carts drawn by oxen, or the same patient beast tramping a monotonous round to draw water from a well, or it may be a woman working a water-wheel with her feet, as the convict works the treadmill, or threshing-floors with oxen treading out the corn. The trees will interest every stranger—forests of cork oaks, mostly small, stunted trees with curiously gnarled and twisted boughs, then the dull, weird, grey-green olives, Spanish chestnuts and acacias, and lastly mountain-pines and larches with stone-pines intermixed, and here and there in warm valleys agaves and aloes growing wild in the open air, though these latter are rare in Spain. The line, too, passes near (seldom through) little old-world, walled towns; occasionally these little towns still have the fortifications made during the Peninsular War, but it is very remarkable that there are practically no modern fortifications on the Pyrennean border. The landscape as the train approaches the Pyrenees affords views of rocky gorges and of beautiful wooded valleys with streams coursing through them, bordered by bold cliffs and sometimes by boulder-strewn mountains, but there are so many tunnels on the railway that the passenger can only catch glimpses of what must often be striking scenery. Often there are small square watch-towers standing alone on the tops of the hills like the Peels in Northumberland and these recall the days of the borderland wars between France, Navarre, and Spain. Sometimes in place of these border fortresses there are monasteries with their out-buildings all walled in so that they also might be fortresses on occasions even as the churches might be which in these border town, are very large and massive, with tiny windows made high

up in the walls, so that even these sacred places could be made defensible in case of invasion. The houses in some of these little towns are themselves curious and picturesque, being three- and four-storeyed buildings stained to pleasing shades of colour by age and lichens and pierced with small windows very inadequate for the admission of air and light to the rooms within. Another sight which is characteristic of the Peninsula is that of four or five boxes, each about five feet high by three wide, marked "Bulls," on an open cattle-truck of a goods train which are intended for the bull-fights performed in every town and even village throughout Spain. It is certain that the representatives at the Congress will be invited to be present at a bull-fight—to English minds the most unsportsmanlike amusement ever devised. The bull-ring itself with its crowds of people in gay-coloured dresses and the initiatory procession are worth seeing, but the show itself is not only cruel but stupid.

Railway tickets to Madrid and back by the ordinary express trains may be obtained for the price of a single fare by any member of the Congress.

The alternative way of reaching Madrid—viz., by sea to Lisbon—is far preferable for those who are good sailors and can afford the time, for the voyage lasts from three to six days, though it might be made shorter and more convenient if a sufficient number of passengers would club together and charter a vessel for themselves, as the regular boats only run once or twice a week. By this plan visitors to the Congress would not only have a healthy and pleasant holiday and save themselves much of the unpleasing tedium of the railway journey, but they would also be able to see Lisbon, one of the quaintest and most picturesque towns in Europe. Lisbon is built on the side of a steep hill sloping down to the river which here opens out into a lake, or rather series of lakes, a most beautiful site, and from the top of the hill there is a most charming view over the town to the river.

Everyone who travels to Madrid through Lisbon should visit the Botanical Garden at the latter town to see the tropical plants growing luxuriantly in the open air which at Kew can only be cultivated under glass. The garden is in the outskirts of the town and therefore easily accessible; it is situated on the slope of a hill, a convenient site, in that the more hardy plants occupy the higher ground and the more delicate ones are below and sheltered from cold winds. The grounds are said to cover ten acres and are well laid out with winding paths and here and there a small pool of water for aquatic plants. The soil seems poor and thin and stony, but the plants flourish there. From the lower entrance the visitor passes through an avenue of Washingtonias which are amazingly large seeing that they were planted only 20 years ago. Within the garden there are clumps of lofty cocoa-nut trees and many varieties of Phœnix, Bourbon, and very large fan-palms and great tree-ferns. Here are also many sorts of cacti and agaves and aloes in flower (with names scratched on their leaves in true cockney style) and great bushes and even hedges of plants which in England are only seen as small bedding-out plants, such as lantana, veronica, and datura arborea. The cannas and begonias make but a poor show and the geraniums (which in Devonshire will cover a cottage) are thin and weedy and the roses are only of the most ordinary varieties. Moreover, much space is wasted on common plants and trees—possibly because they are rare in Portugal. That part of the garden also which is intended for the botanical students needs supervision, for here are plants without labels and labels without plants and labels on the wrong plants, and occasionally a whole family of plants is characterised by a simple initial with no explanation of that initial. There is but one greenhouse and that poorly furnished with comparatively common plants. The banana trees, too, are shabby and poor and there are but few plants in bloom to be seen in the garden and no care seems to be taken to insure a succession of flowering plants, but the wealth of tropical vegetation more than atones for these minor faults and it must be remembered that in this Lisbon Botanical Garden there are no potted plants put out for the summer months only, but there are to be seen great trees and bushes indigenous to Brazil, Syria, New Holland, &c., planted out and left in the garden throughout the winter—e.g. (among many others), cocos Australis, cocos Romanzowiana, and cocos flexuosa as lofty trees, and nicotiana colossea 10 feet high. In a word, the Lisbon Botanical Garden, which is open free all day, is a delightful place in which to spend an hour or two even for the visitor who has forgotten his botany.

Oporto is well worth a visit by those who wish to know how port is made and are interested in the most mediæval sanitation hidden behind a modern mask. Visitors to Oporto *viâ* Lisbon should not take their tickets to Madrid through a London agency, as in that case they will have to spend an uncomfortable night in Pampilhosa, whereas the direct and proper route is through Barca d'Alva. Those who travel from Lisbon or Oporto to Madrid may spend a profitable day in Salamanca, the oldest university town in Spain. From Lisbon to Madrid is only 11 hours' journey by the Sud Express, but this train only runs on Mondays and Thursdays and places must be booked the day before. There is, however, a daily express at 9.30 P.M. which is almost as fast and cheaper. The scenery on this line is most interesting and the train gives glimpses of the aqueduct which supplies Lisbon, of fields tilled by men dressed in white shirts and breeches as if they meant to play cricket where there is no grass to play on, although on the sides of the hills there are quite large flocks of sheep and goats with shepherds watching them. Women, too, work in the fields, for wages are very small, less than from 6*d*. to 9*d*. per day, and the children must be fed somehow, if only on chick-pease and oat-bread. The vegetation along the line must attract the attention of the least observant traveller, for orange and lemon trees, bamboos, carob trees, Indian corn, cacti, yuccas and agaves and great aloes which flower in the open air during the summer, eucalyptus trees, and palms and tree-ferns growing along the sides of the railway are not common sights with us.

THE ORGANISATION OF THE PROFESSION.

(FROM OUR SPECIAL CORRESPONDENT.)

The Battle of the Clubs at Cheltenham.—The Profession organises, wins in a First Encounter, and is subsequently signally defeated.

IN January, 1901, 14 of the junior practitioners of Cheltenham met together and discussed the evils of club practice. In a somewhat loose and informal manner they constituted an organisation. The Oddfellows and members of other benefit societies paid only 3*s*. a year for medical aid and if they chose the members might also enter the whole of their families for another 5*s*. a year. The practitioners who gathered together passed a resolution to the effect that henceforth it would be considered derogatory to the dignity of the profession to accept less than 4*s*. a year per member or 10*s*. per family. It was likewise decided that if any practitioner resigned his post as medical officer of a friendly society because he could not obtain this rate of payment no other member of the profession was to take his place. These proposals having met with general approval it was determined to try a test case and Dr. R. Davies threatened to resign his post as medical officer of a benefit society unless the subscription was raised from 3*s*. to 4*s*. per member. The members of Dr. Davies's lodge, in reply, acknowledged that the payment they made was not sufficient, but they explained that if they increased the amount they would place themselves at a disadvantage in respect to other lodges. Therefore, the three months' notice was duly served and accepted. The friendly society advertised for a new medical officer in the local papers, but no one replied. Then it again advertised, this time offering the very terms which Dr. Davies had insisted upon, but received no other reply than that sent by Dr. Davies himself. The friendly society was consequently obliged to reappoint its medical officer and this at the new and higher rate of payment. This, then, was an emphatic victory for the medical practitioners, and now Mr. A. A. Dighton, who had a large lodge of Oddfellows, made a similar application, but he was at once met with a flat refusal and therefore he resigned. Knowing that the medical men of Cheltenham were well disposed to each other and that they would not compete against Mr. Dighton, no attempt was made by the lodge to secure the services of a local practitioner. Advertisements were consequently sent to some Yorkshire newspapers and replies were received.

By this time, and with but one exception, all the medical practitioners of Cheltenham had signed a declaration that

they would not apply for the vacant post. It was worth more than £150 a year, but there was much abuse. Many members belonged to the trading classes and could well afford to pay the usual fees. Indeed, their guineas were readily forthcoming when it was thought necessary to call in a consultant, but they thought 3*s.* a year sufficient for their own medical officer. Some of these cases were mentioned to me. Thus there was one member of the Oddfellows who had several bad attacks of illness and always paid a guinea for a second opinion. Another patient who was content to pay only 3*s.* a year was concerned with an important business. Then there was a well-to-do trader who refused to be attended by an assistant when Mr. Dighton was ill and therefore sent for another well-known practitioner. Another large trader was a member of the Oddfellows and only paid 5*s.* a year for medical attendance for his family. Another prominent Oddfellow occupying a respectable position considers that he is entitled to every attention at the hands of the medical officer. If these well-to-do people live within the radius of four miles they expect to be attended for 3*s.* a year just as if they were poor struggling labourers or badly paid workmen. What with hospitals, the central and the branch provident dispensary, the many clubs and friendly societies, and the low death and sick rates, there does not remain much remunerative work for the general practitioner. Thus, as another instance, a patient died the other day. The bill for medical attendance during his last illness amounted to £35 and this was paid. Nevertheless, the two sons of this patient belong to a friendly society and only pay 3*s.* a year for medical attendance. During the influenza epidemic there were so many patients that Mr. Dighton had to engage a qualified assistant, and he found that the cost of attending his patients amounted to about a guinea per day more than he was receiving from them. He was glad when the epidemic began to abate. The real value of club work is not the amount earned but the regularity of the payments. Private patients, on the other hand, rarely pay regularly. Indeed, it is when the patient dies that there is the best chance of obtaining a settlement of the bill. On the other hand, there are certain expenses—rent, taxes, servants' wages, &c.—that must be regularly met and the cheque so punctually received at the end of the quarter from the benefit society or club often just serves to pay these most urgent claims. Therefore a practitioner may value his club or contract work more for its certainty and regularity than for the amount actually received.

The question of age and sex is also a very important consideration. However small the subscription paid by an adult male it always pays better than a much larger sum if given for women and children. The former give but little, and the latter very much, trouble. Now, at Cheltenham both the Liberal club and the Conservative club have thought to increase their influence and popularity by providing medical attendance for their members. This is paid for at the rate of 4*s.* a year, but the value of the appointment, so far as the medical officer is concerned, is not so much the extra shilling as the fact that there are no women and children members. As these latter do not vote at Parliamentary elections the organisers of the political clubs have not troubled themselves to procure medical aid for them. But out of this arise some delicate side issues which show how much the delicate tact of diplomacy is needed in the matter of the organisation of the profession. It has been seen that Dr. Davies obtained the increase which he demanded and there appeared, judging the matter superficially, no reason why Mr. Dighton should not be equally successful. But then Dr. Davies was also medical officer of the Liberal club while Mr. Dighton was medical officer of the Conservative club. Now Mr. Dighton acknowledges that he had occasionally said it was better to belong to the Conservative club than to the Oddfellows. By this he meant that the position of medical officer to the Conservative club was preferable to that of medical officer to a lodge of Oddfellows. Also, as the arrangement between the members of the political club and their medical officer was more fair than that of the Oddfellows and their medical officer, the members of political clubs might expect more prompt or more careful treatment. But it will be seen how all this is susceptible of complete misinterpretation. Mr. Dighton was, of course, accused of canvassing for the Conservative party and this at the expense and financial damage of the Oddfellows lodge which had engaged him as its medical officer. If, as was probably the case, the leading spirits of the Oddfellows were Liberals, then Mr. Dighton's conduct would appear to them to be infinitely more reprehensible. In such circumstances it is not surprising to find that that section at least of the Oddfellows lodge was bitterly opposed to Mr. Dighton and instead of attempting to come to terms urged that the friendly societies should form a medical institute of their own and employ a medical man who should be entirely at their service instead of a medical officer who was canvassing for a rival institution and for the political party to which in all probability the majority of the lodge were opposed.

As a consequence of all these complications and misunderstandings a very active campaign was successfully carried forward and sufficient friendly societies were persuaded to amalgamate. They took a large house and there installed what is now known as the Cheltenham Friendly Societies Medical Association. Thus, not only did Mr. Dighton lose his lodge of Oddfellows, but other practitioners, including Dr. Davies, also lost their lodges, for these now joined the federation of societies which had formed the above-mentioned medical association. This association was successful in securing the services of a practitioner. Thus, the struggle was fairly commenced. What could the Cheltenham practitioners do? They have refused to meet or to associate with the new-comer. So that there should be no error in this matter and to treat the whole question in an impartial manner I called at the surgery of the Cheltenham Friendly Societies Medical Association and was courteously received by its medical officer. He assured me that he was not undercutting the profession. On the contrary, he suspected that some of the old-established practitioners of Cheltenham were undercutting him. Every member of the association paid 4*s.* 1*d.* per annum for medical aid. The penny went for administrative purposes and the 4*s.* were devoted to the medical service. But the old rate of payment used to be 3*s.*, and some lodges had refused to join the new federation of the various societies and retained their old medical officers. Was this because these medical officers were content to continue to receive the old rate of payment, the 3*s.* instead of the 4*s.*?

In regard to families, I was assured that the wives of members had to pay 1*s.* 1*d.* per quarter for medical aid and that young persons above 15 years of age paid at the same rate. A wife with two children had to subscribe 1*s.* 7*d.* per quarter and 2*s.* 1*d.* if she had more than two children. Thus the payments made are as high as, and in regard to the families they are higher than, what the local practitioners had demanded. Their proposal was 4*s.* for single members and 10*s.* for families, but in this institution it is only the small families that pay 10*s.* 5*d.* per annum and the larger families must give 12*s.* 5*d.* per annum. However, whatever the sum paid it is certain that it would be a large amount if there were a great many members. Thus a profit might be made out of the medical officer's work and it had been reported in the town that the medical officer had signed a three years' engagement at £200 a year. He assured me, however, that this was not the case. A three months' notice on either side suffices to put an end to the agreement and though the salary is £200 a year this is only a guaranteed minimum. If after all the expenses are paid a balance remains I was assured that it was to be handed over to the medical officer. It is the medical officer, therefore, who is to pocket the net profits if ever there should be any, and not the friendly societies. Consequently, the medical officer of this association urges that he is not undercutting the other practitioners of the town, but on the contrary he suspects that he is getting better paid than some of them. Nor is he exploited by a lay committee, for the profits go to the medical officer and not to the lay committee.

The medical officer of the association also informed me that the declaration against consulting with him was signed before he came and that he had no knowledge of any difficulty having arisen till he had been in Cheltenham some four weeks. If this be true it shows how extremely ignorant some medical men are concerning the politics of their profession. Even a very slight knowledge of the economical struggle that is going on all over the country would suffice to indicate that wherever attempts are made by friendly societies to establish a new medical institute it is because they have some dispute or difficulty with their old medical officers. In such circumstances, therefore, no medical man should apply for such a post without first making very careful inquiries. But here is a medical officer

who signs an agreement, enters upon his new duties, and it is only four weeks later that he is informed he has been acting against the interests of the profession and that the local practitioners will not meet him. He maintains that he did not know that there was a financial difficulty. He was informed that the Oddfellows were quite willing to pay the 4*s.* a year to their former medical officer, Mr. Dighton. He knows that they are now actually paying that sum and more, but he understood that the Oddfellows had quarrelled with their medical officer because he was canvassing for the Conservative Association's club and as some of the Oddfellows were strong Radicals they were not going to have their benefit society injured for the sake of an antagonistic political party. Still, common prudence would suggest that such a story as this should not be accepted without some inquiry. As a result of this neglect the medical officer of the Friendly Societies Medical Association finds that if he wants a second opinion he must send to Gloucester or to Worcester for a consultant. This, he says, is a loss for the Cheltenham medical men and he was quite emphatic on the point, insisting that many of his patients would willingly pay for consultants, thus indirectly admitting the existence of much abuse, for if a member of a friendly society can pay for a consultant he can pay the ordinary small fee charged by a general practitioner.

Such is the present position at Cheltenham. The association founded by the friendly societies has been in existence for just one year and so far it has had considerable difficulty in raising enough to pay its medical officer the minimum salary promised. Can the medical men of the town organise matters so well as to prevent any other body joining them? It is an open question and it must be confessed that so far the medical union at Cheltenham is not so stalwart and well-disciplined a body as some of the other organisations which are engaged in a similar struggle in different parts of the country. In any case, though successful at first, it must be confessed that for the moment it is under a cloud. Some of its members have lost a considerable portion of their incomes and this is not encouraging; it does seem as if there had been, if not absolute blundering on their part, at least some lack of diplomatic foresight. This is no reason why efforts should cease; on the contrary, they should be resumed, the situation being more carefully studied and future action being planned with more thoroughness and circumspection.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The City Council and the Infirmary Site.

AT the meeting of the city council on March 18th Sir James Hoy moved that the report of the special committee *re* the Manchester Royal Infirmary be approved and adopted and that it be authorised and instructed to communicate with the trustees of the Royal Infirmary and to take such measures as the committee might deem necessary or desirable for the purpose of giving effect to the recommendations contained in the report. The gist of the report was to advise the council to give £400,000 for the whole of the infirmary site. No part of it will be retained as a receiving house or accident ward. No doubt there will be a paring from its outer border for widening the surrounding streets but the rest of the space will be free for the erection of the art gallery and free library so much wanted in Manchester. After some discussion and a crude suggestion from one of the council that there should be shops in the proposed building the motion was passed unanimously. Yesterday a special meeting of the infirmary board was held at which the offer of the Manchester Corporation was discussed. It was resolved to convene a special general meeting of the trustees on April 3rd, when a motion will be submitted for approval accepting the offer of the corporation, deciding to build the new infirmary on the Stanley grove site, and to acquire the same and other adjoining property if expedient, including the site of the proposed Southern Hospital, to obtain plans, &c., and to take "such measures as may be necessary or requisite" to give effect to the resolution. The matter has now, therefore, reached the last stage—reference to the trustees—and it may pretty confidently be anticipated that this long-talked-of change will be carried through, to the great advantage of the community and of the infirmary.

Death of the City Coroner.

The death of Mr. Sidney Smelt, the city coroner, on March 14th removes from our midst a man well known in Manchester. A barrister by calling, with decided views of the dignity and importance of the coroner's court and naturally, perhaps, more influenced by the legal bearings than by the medical aspect of the cases brought before him, he was not always in sympathy with the views of members of our profession, "as to the necessity or otherwise of holding post-mortem examinations in every case where death occurred under suspicious circumstances." This divergence of opinion not infrequently brought him into conflict with some of our *confreres* who would, however, be ready to admit that if he differed from them he did so honestly. He did good, it may be hoped, by the vigorous sanitary lectures which he was in the habit of addressing to the jury and witnesses when the occasion allowed of his improving it. Early and improvident marriages, the improper feeding of children, the overlaying of infants, and the dangers of flannelette were favourite topics. Among the poorer and more ignorant classes it has been a common article of faith that "saffron whisky" is a remedy for measles, and he has often spoken strongly "against the folly of administering whisky so doctored to young children." But, as one of the local papers says, it may be feared that his vigorous denunciations "were not always agreeable to the impatient jurymen and negligent witnesses to whom they were addressed." For 20 years he had acted as deputy to his predecessor, the late Mr. Herford, who was a confirmed invalid for the whole of that period, and was appointed coroner in 1896 at a salary of £800 a year. Manchester has not apparently been favourable to medical coroners; indeed, I do not know whether she has ever had one. Mr Smelt's deputy, Mr. L. J. Aitken, is also a barrister-at-law. The office will not be filled up for about three months. There are available medical men with a knowledge of law and it will be a pity if the community is deprived of the advantages resulting from such special knowledge by the election of a merely legal official.

Anthropometrics in Salford Board Schools.

Some interesting observations, which may lead to further developments, are being carried on in three of the Salford board schools. At each of the three schools 30 boys were taken and arranged in groups of ten, of the ages of eight, ten, and 13 years. The schools differ considerably as to the buildings themselves and their surroundings. The John-street school, Pendleton, is described in the report as a "poorly ventilated building, drawing its breath from the comparatively stagnant pool of air" surrounding the premises, while the children come from poor homes and have little opportunity for healthy recreation, living in a smoke-laden atmosphere and probably having insufficient and unsuitable food. It is not to be wondered at that their anthropometric record should fall below that of the Grecian-street school, which is better ventilated, with more open surroundings, where there is a better class of home, and consequently better food and more of it, and where exercises and swimming are encouraged. The record for the Trafford-road school was slightly above the mean of the other two schools, the school and its surroundings being fairly good. All the boys were weighed and measured without clothing. In spite of their disadvantages it speaks well, as the report says, for the vitality of the children that up to the age of eight years the battle is well maintained, but after this the John-street schoolboys "fell below the average to a marked extent, especially at ages 10 and 13." We are not told of the mortality in the families of these children or if they represent the survival of the fittest, but we may well believe the medical officer who "was convinced that this could be remedied by fresh air, sunlight, suitable and sufficient food, and healthy exercise." The problem still to be solved is how to bring this about, for these children may well be called the creatures of circumstances "over which they have no control." The one encouraging statement is that in the case of the Grecian-street boys "there was evidence of some improvement in type as compared with the average boy of 25 years ago." The future well-being and healthy development of the population will largely depend on the views of the new educational authorities as to whether or not sound bodies are as important for the race as sound minds.

Housing in Angel Meadow.

The interest taken in the housing of the poor in the Angel

Meadow district shows no sign of subsiding and since writing last an important deputation has waited on the sanitary committee, the outcome of a movement to help forward the provision by the municipality of houses for the people where houses have been condemned and destroyed. Alderman McCabe said that the sanitary committee had closed a great number of houses in the district, the improvement committee had pulled down many more, and the extensions of the Lancashire and Yorkshire Railway had also closed many. The result had been increased overcrowding as the people had to live near their work. Mr. Schwann, M.P., pointed out that whereas formerly one family would occupy a four-roomed house it was now common for four families to live in it. Councillor Wells said that the majority of the 4455 displaced within the last ten years were still living in the St. Michael's Ward and the sub-letting had enormously increased. He knew of one person who rented eight houses at a rent of 5*s*. 9*d*. per house and let the rooms off at 5*s*. 6*d*. a week for each room. "These furnished lodgings were mainly occupied by the lowest class of the population—the 'scuttlers,' 'hooligans,' and the women who lived with them." Several clergymen of various denominations bore similar testimony. In reply the chairman assured the deputation of the sincere desire of the committee to press on housing reform and said that one great difficulty was the high price required for the land by the landlords who "resisted to the utmost the selling of their property." Another was the opposition in the council to comparatively unremunerative undertakings. The owners sometimes refuse to sell property which has been closed for years, preferring to wait until the value of the land had risen. The deputy chairman said that the question for the ratepayers to decide was—"Will you submit to the present condition of things or will you submit to another halfpenny on the rates?" The corporation will have to learn how to build sufficiently well without extravagance—a lesson which seems difficult to learn.

March 24th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Administrative Difficulties connected with Small-pox Outbreaks.

AT a meeting of the West of England and South Wales branch of the Incorporated Society of Medical Officers of Health, held at Pontypridd on March 19th, a discussion took place upon some administrative difficulties connected with outbreaks of small-pox. Mr. D. J. Thomas, medical officer of health of Merthyr Tydvil, pointed out the danger of vaccinating "contacts," especially of the vagrant class, and then releasing them from observation. They might, he thought, be attacked with modified small-pox, take no precautions, and thus be the means of spreading the disease, whereas if left unvaccinated they would be sufficiently ill to require treatment, and would then be isolated and no longer a danger to others. Mr. Thomas gave several instances from the recent outbreak at Merthyr in favour of the contention that small-pox is far more infectious in the earlier than it is in the later stages. In one case a woman infected seven persons in Merthyr which town she left on the third day of the disease, and although living in common lodging-houses in Aberdare and going freely about the district during the following week yet no cases occurred in the latter town. Dr. Edward Walford said that in Cardiff during the past 15 years whenever they had removed a case of small-pox in the early stage they had never had any spread of the disease, but among the cases now in the Cardiff Hospital there was evidence that some had been infected from a patient in the first day of the disease. Several of those present at the meeting disapproved of the present method of obtaining the vaccination of "contacts," the delay in securing the services of the public vaccinator frequently resulting in a refusal of vaccination by those in the infected house, although if vaccination could have been offered before the removal of the patient there would have been little or no difficulty in obtaining the consent of those concerned. The Cardiff port sanitary authority has passed a resolution authorising the medical officer of health to obtain the vaccination of "contacts," and Dr. Walford asks the nearest medical practitioner to vaccinate, the fees being paid by the authority. In Newport Dr. J. Howard-Jones usually asks the public vaccinator to accompany him to a house where there is suspected small-pox and thus procures the vaccination of "contacts" very promptly.

Death of Mr. John Paddon, M.B. Lond., M.R.C.S. Eng.

Dr. John Paddon, who died at the Mumbles on March 14th at the age of 86 years, retired from practice in Swansea about 15 years ago. He qualified as M.R.C.S. Eng. in 1839 and as L.S.A. in the following year, when he also graduated as a bachelor of medicine of the University of London. After practising for a few years in his native town of Truro he went to Swansea in 1846, where he established a large practice and was eventually elected on the staff of the Swansea Hospital. Outside his profession Dr. Paddon had many interests and took his part in the public life of the town. He was one of the first officers to be appointed to the Glamorgan artillery militia and was a great lover of all kinds of sport in his younger days, being a wrestler and a boxer of no mean capacity.

Farewell Dinner to Dr. W. G. Savage.

The past and present students attending the public health department of the Cardiff College entertained Dr. W. G. Savage to a farewell dinner on March 21st. Dr. Savage has been for nearly four years the principal bacteriologist in the Cardiff and County Public Health Laboratory and he has also during the same period given lectures in the Cardiff College to those who were preparing for the public health examinations. He is leaving Cardiff to become medical officer of health of the borough of Colchester. The dinner, which was presided over by Dr. T. H. Morris, was attended by most of the members of the Cardiff Infirmary staff and by many of the medical practitioners of the town. In the course of the evening Principal Griffiths, F.R.S., on behalf of the subscribers, presented Dr. Savage with an oak-framed barometer.

Administration of the Vaccination Acts.

The Worcestershire county council has passed a resolution urging upon the Government the necessity for more stringent regulations for dealing with tramps infected, or suspected of being infected, with small-pox, and also urging that revaccination at about the age of 12 years be made compulsory, and that the administration of the Vaccination Acts should be transferred to county councils. Worcestershire is very well provided with hospitals for the isolation of cases of small-pox

Abuse of Medical Charities.

At the Exeter Police-court on March 19th a woman was summoned for obtaining medical relief from the Exeter Dispensary by false pretences and another woman and man were also summoned for aiding and abetting her. The prosecution was conducted by the trustees of the dispensary. From the evidence it appeared that the first defendant was the aunt of a child of whom the male and female defendants were the parents; she obtained a recommendation for the Exeter Dispensary from a subscriber by representing that she had a child who required medical attention; she then used the recommendation for her nephew, representing to the authorities at the dispensary that the father did not earn £1 weekly, and the boy was treated there for about six weeks. One of the rules of the institution stipulates that if a person earns £1 per week he is not entitled to treatment for himself or family. As the parents of the boy earned more than this amount and were able to pay for medical attendance the action was brought. Eventually the magistrates dismissed the case against the male defendant, but the two women were each fined 10*s*. and ordered to pay the solicitor's fees.

The Dentists Act.

Before the stipendiary magistrate (Mr. T. W. Lewis) at the Cardiff police-court on March 17th Mr. W. Bernstein was summoned at the instance of the local branch of the Dental Association for implying that he was a person specially qualified to practise dentistry, whereas he was not registered under the Dentists Act of 1878. The defendant was fined 20*s*. and costs.

March 24th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Changes in the Edinburgh Royal Infirmary.

DR. P. MCBRIDE, who has been the senior surgeon to the ear and throat department of the Edinburgh Royal Infirmary since the department came into existence twenty years ago,

has passed out of office in virtue of twenty years of service. The managers of the infirmary have given expression to their thanks to him for his ungrudging devotion to the interests of the infirmary during his tenure of office. They also have recorded their recognition of the position which he holds as one of the highest living authorities on his specialty and they have not forgotten that he started the department to which he was attached. Dr. McBride is succeeded by Dr. R. McKenzie Johnston, who has been assistant surgeon in the department for many years, and Dr. A. Logan Turner has been appointed assistant surgeon. Dr. McBride was also university lecturer on his specialty and this position he has also had to resign. He is succeeded in it by Dr. McKenzie Johnston.

The Removal of Edinburgh Slaughter-houses.

It will surprise many outside Edinburgh to know that the capital of Scotland retains its slaughter-houses in a densely populated part of the city. The town council has, however, taken the matter in hand and it is taking steps with a view to their removal. The butchers are up in arms and have even gone the length apparently of packing meetings to carry motions against the proposed removal. It would appear, however, that the trade interest is not to determine the matter, for it looks as if the town council means to carry it through, and in this it will not fail to have the moral support of the medical profession.

An Accidental Case of Poisoning in Edinburgh.

An important case of this kind was tried recently in the High Court of Justiciary in Edinburgh. A lady died at the end of last year with symptoms of strychnine poisoning after taking a powder supposed to contain five grains of sulphate of quinine, five grains of phenacetin, and one grain of exalgin. The powder had been made up by an assistant in a druggist's shop in the neighbourhood. The defence accepted the view that the lady died from strychnine poisoning. At the trial it was stated that exalgin and various other dangerous articles were kept in a separate cupboard in conformity with one of the regulations of the Pharmaceutical Society. There were 14 or 16 bottles on the shelf where the exalgin and strychnine bottles were placed. The unqualified assistant who made up the powder was entitled to dispense exalgin but not strychnine. Lord Maclaren in summing up commented on the evidence that in working the Pharmacy Acts it was common in the trade to keep medicines like exalgin, which were not poisons in any proper sense of the word, in the same compartment along with more deadly poisons, to be handled with special and particular care. He hoped that the attention of the Pharmaceutical Society would be directed to this point and that care would be taken that these specially dangerous poisons should be kept, as the Act clearly implied, in a place by themselves. The jury returned a verdict of "Not guilty" against the assistant and Lord Maclaren said that he was very pleased to give effect to the verdict which exonerated the accused from all criminal negligence.

Public Health of Glasgow.

The medical officer of health of the city of Glasgow reports that for the fortnight ending March 7th the death-rate was 17·8 per 1000, as compared with 19·0 for the preceding fortnight and 24·8 for the corresponding period of last year. It is satisfactory to note that at the present time the city has a clean bill of health as far as small-pox is concerned. As regards typhus fever, six cases are reported as being in hospital. In this connexion there is a sad interest attached to the death of the head schoolmaster of one of the large public schools situated in the east-end, the poorer part of the city. Four children who were removed to the hospital suffering from typhus fever from the same district were attending this school. This has led to conjoint action on the part of the medical officer of health and the school board whereby the regulations as to reporting cases of "dirty" children attending schools should be more rigidly enforced. This has already borne fruit and such cases are now being more regularly reported and subsequently dealt with by the sanitary officials. Another matter of interest is the report by the medical officer of health of a death from glanders which occurred in the city at the end of last month. This is the first death from this disease which is known to have occurred in the city since 1892. The following are the chief facts connected with the case. The deceased was a coal dealer who conjointly with another contractor rented a stable. Cases of glanders were detected in this stable on the following dates, Dec. 31st, Jan. 10th, 17th, 19th, and 31st, and Feb. 2nd and 7th. The horses which were affected on Jan. 19th and Feb. 2nd belonged to the deceased whose illness began six days after the latter date. The premonitory symptoms were of an indefinite febrile character, but on Feb. 23rd the patient presented grave symptoms, evidently the accompaniment of a severe broncho-pneumonia. Pain and œdema occurred most markedly in the right hand but to a less extent in the right knee and both ankles. Before death, which occurred on Feb. 24th, a large dark-red swelling had appeared on the right side of the face, involving also the eyelids, while a pustule had begun to form over the left eye. A complete post-mortem examination was not permitted, but the city bacteriologist (Dr. R. M. Buchanan), from material obtained from the eyes, nostrils, and the pustule on the face, was able to prove by inoculation experiments and cultures that the case had undoubtedly been one of glanders. Evidently there is some doubt as to the channel of infection. It is reported that the man while at work among the infected horses had some superficial cuts, but no evidence of these was obtained on examination of the body. The pulmonary affection from which the man suffered suggests that the entrance of the poison was by the respiratory tract.

Public Health of Govan.

Dr. James Barras, medical officer of health of the borough of Govan, has just issued his annual report. It is an admirable document and worthy of perusal by public health authorities. The following facts and abstracts culled from the report may be of some interest. The population of this important burgh adjoining, and really part of, Glasgow, according to the returns of the Registrar-General from the last census, is 76,350; to these figures, however, should be added 182 in shipping and 5642 the population of that portion of South Govan which is now known as the seventh ward and which was added to the burgh in August, 1901. This makes the total population of the extended burgh as at the 1901 census 82,174, while the population estimated at the middle of the present year shows it to have increased to 88,868. This corresponds to 67·375 persons per acre. The birth-rate stands at 35·512 per 1000 and the death-rate 18·353 per 1000. Under age-mortality the infantile death-rate is 133·9 per 1000 births, being 26·0 per cent. of the total mortality; the death-rate for under five years of age is 40·4 per cent., and that for over 60 years of age is equivalent to 17·3 per cent. The zymotic death-rate equalled 2·070 per 1000, but of this only 0·9 per 1000 is accounted for by notifiable zymotic diseases, the rest being due to whooping-cough and diarrhœa. In the second part of the report dealing with the prevalence of, and mortality from, infectious disease is an account of an epidemic of small-pox which occured about the beginning of the year. 110 cases were notified, 15 of which proved fatal, showing a case-mortality of 13·6 per cent. With reference to the outbreak and its distribution throughout the burgh, Dr. Barras states that the cause of the epidemic was almost wholly due to the fact that one of the first cases reported was that of an unvaccinated infant occurring in a densely populated locality, death taking place before the true nature of the illness was notified to the sanitary department. The source of infection in this instance was never discovered and as there had been no attempt to minimise the visits of friends the result was, as anticipated, a serious outbreak in and around the infected area. The protective influence of vaccination against an attack of small-pox was again evidenced during the epidemic, as of the total cases only nine were those of children under school age and of these five were unvaccinated, being aged respectively 11 weeks, three months, three months, three and a half months, and 11½ months. As regards death, the only cases which proved fatal under 15 years of age were both unvaccinated infants, aged respectively 11 weeks and 11½ months, the attacks in the remaining instances being of a mild type the result of successful primary vaccination. As regards the fatal cases over 15 years of age, four occurred amongst those who had never been vaccinated, aged respectively 21, 21, 33, and 45 years, whilst of the remainder seven had not been revaccinated. The above facts, as Dr. Barras points out, emphasise the necessity of having revaccination performed on the completion of school life. Not a single case occurred where revaccination had been successfully accomplished and resorted to either before or shortly after exposure to the infection. Of the total cases—viz., 110—there were no less than 20 who contracted the disease after obstinately refusing

the offer of revaccination. In three such instances the attacks proved fatal. Most people will agree with the remark that it is earnestly to be desired that the day is far distant in this part of the United Kingdom when the "conscientious objector" will be able to jeopardise the health and lives of his neighbours through neglecting to fulfil a duty which he owes, if not to himself, then by all means to the community at large. Under diphtheria and membranous croup it is to be noted that out of 64 cases 16 deaths occurred, showing a percentage mortality of 25. This is a higher rate than that of the two previous years but it is lower than that for any of the ten years from 1890 to 1899 inclusive. The figures which are given show that the percentage of deaths to cases notified averages for the last five years 23·8, and for the five years previous to that period 34·9. The average for the three years previous to the latter period again shows still a higher average—viz., 40·2. Therefore, in spite of a slight increase this year in the death-rate there has been since 1893 a very steady fall, no doubt due to the aid given by the bacteriologist in diagnosis and by the serum treatment now generally adopted. In dealing with the mortality from other causes it is interesting to note from the figures given for percentage mortality for tuberculous diseases that here also there is a gradual diminution taking place; thus for 1864–72 it is 22·0; for 1873–82 it is 16·5; for 1883–92 it is 13·4; and for 1893–1902 it is 12·8.

March 24th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Possible Epidemic of Small-pox in Dublin.

THERE were over 40 cases of small-pox in Dublin on March 23rd. On March 21st three children were removed from their home in a densely populated district on the north side of the city and transferred to the isolation hospital at the Pigeon House Fort. One of these has attended until quite recently a large public school and must have been in contact with many other children. No fresh case has been notified in the city since March 21st, but Sir Charles Cameron reports that a case of a virulent type was discovered on the 22nd close to the city. The patient was removed at once to the corporation hospital. It is satisfactory to note that the latter institution, though small, is now available and is capable of being quickly enlarged if necessary. A letter from the President of the Royal College of Surgeons in Ireland appeared in the public papers of March 17th in which he (Mr. L. H. Ormsby) stated that he had just made a careful and complete examination of it and that he felt satisfied that both as regards situation and equipment it was an admirable hospital of its kind. As will be seen, however, from the report of the Dublin Sanitary Association this opinion is by no means universal.

The Dublin Sanitary Association.

The annual general meeting of the Dublin Sanitary Association took place on March 19th. Dr. C. F. Moore, the outgoing President, occupied the chair and there was a large attendance. Dr. T. P. Kirkpatrick, honorary secretary, read the draft report, which referred among other matters to the difficult question of small-pox isolation and expressed the opinion that a very real danger would be caused to steamers passing down the river by the present isolation hospital, which should therefore be only a temporary substitute, while attention to the subject should not be relaxed until a proper site in the country had been obtained.

Royal Commission on University Education in Ireland.

The final report of this commission was issued in London and Dublin on March 11th, in a blue-book of 73 pages, the greater part of which is occupied by the majority report—a pronouncement divided into 12 sections with a series of 19 recommendations. The general recommendations, signed by all the commissioners with the exception of one, are set out in 19 paragraphs, in which Nos. 4 to 14 deal principally with the medical schools, and in substance recommend that the Royal University shall be converted into a teaching university, having as its constituent colleges the Queen's Colleges in Belfast, Cork, and Galway, together with a new college for Roman Catholics which shall be established in Dublin and shall absorb the Catholic University School of Medicine. It is also recommended (1) that the colleges should be accorded a large measure of autonomy so that each may be enabled to develop freely on its own lines; (2) that a liberal increase should be made in the endowment and equipment of Queen's College, Belfast; (3) that no addition should be made to the endowments of the Queen's Colleges at Cork and Galway until they give evidence of increased utility; (4) that the school of medicine in Queen's College, Galway, should be limited to the first two years of the medical curriculum; and (5) that the degrees of the reconstituted university should be open to women on the same terms as to men.

Clendinning v. Byers.

At the Belfast Assizes on March 23rd the breach of promise action brought by Sarah Clendinning against Dr. J. W. Byers resulted in judgment being entered for the defendant. Dr. Byers, who from the commencement of the proceedings denied that the relations existing between the woman and himself had been more than those of medical man and nurse, sought to expedite the trial but was prevented from doing so. Proceedings were commenced on Sept. 4th, 1902, but when the case was heard at the Belfast Assizes on Monday last no appearance was put in on behalf of the plaintiff. The Solicitor-General, who appeared for Dr. Byers, referred to the mendacious report that had been circulated to the effect that the non-appearance of the plaintiff was due to a compromise, the judge remarking that he assumed that when the plaintiff did not appear she had no cause of action.

March 25th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Alcohol Question.

AT the meeting held on March 10th the Academy of Medicine finally made an end of the long discussion on liqueurs flavoured with essential oils. M. Laborde, the unwearied and valiant champion of prohibition, being ill and confined to bed, it fell to M. Joffroy to take charge of the report of the commission in M. Laborde's place. M. Joffroy carried by a very large majority a series of propositions much more stringent than those which had been so violently opposed when put forward by M. Laborde. The following are the conclusions of the academy: "The academy hereby declares that all essences, whether natural or synthetic or extractives, which may be incorporated with alcohol or with wine are without exception to be considered as dangerous or at least as harmful drinks. The academy also declares that the dangerous qualities of these drinks, which arise both from the alcohol and from the flavouring agents employed, make them substances to be prohibited. If absolute prohibition is impossible they should be so heavily taxed that the tax would in itself be a prohibition. The academy wishes to lay particular stress upon *apéritifs*—namely, those alcoholic and flavoured drinks which are taken fasting, for the very fact that they are taken on an empty stomach renders their absorption the more rapid and increases their toxicity." The alcohol commission finally asked the academy to pass the following motion:—

> The academy hereby resolves that the most strenuous measures should be taken to diminish the number of drink shops.

This motion was passed unanimously amidst loud cheers.

The Protection of the Supply of Drinking-water.

At the same meeting of the academy Dr. Roux presented to the House a report of some work carried out by M. A. J. Martin, inspector-general of the sanitary department of the Seine, and M. H. Thierry, deputy-inspector-general, concerning the protection of the sources of the supply of drinking-water. The gathering grounds and springs which supply water for the town of Paris are the object of unceasing attention on the part of the municipal engineers, bacteriologists, and chemists. Since 1900, moreover, the Prefect of the Seine has, by agreement with the municipal council, instituted a service for the medical supervision of the districts in which are situated the gathering grounds. M. Martin and M. Thierry are the chiefs of this department and they have as their assistants the various medical men practising in the districts in which are the gathering grounds. As soon as any one of these medical men becomes aware of the existence of a case of dysentery or of typhoid fever among his

patients he reports the case to Paris and the municipal authorities put at his disposal all the necessary plant for the disinfection of the linen and the excreta of the patient. More than this, the medical men take measures to prevent the pollution of water-courses or springs by pathogenic germs. This medical inspection makes it fairly certain that washing places or the drainings from dung-heaps or latrines will not contaminate underground springs and water-courses. It is easy to see that this method of inspection is exceedingly useful not only to the town of Paris but also to the inhabitants of the districts inspected because it keeps the local hygienic conditions in a better state than they would otherwise be. The plan was in working order before the passing of the recent Act of Public Health, and it has been a success owing to the good understanding which exists between the municipal authorities of Paris and the mayors of the various communes concerned. Thanks are due more especially to the tact with which those responsible for the working of the measure have carried out their duties and to the devotion of the medical men in question. Dr Roux gave as an example the case of the little town of Cerisiers on the Bacule which is close to a gathering ground in the valley of the Vanne. Last year several cases of typhoid fever occurred and it was noticed that in all probability the effluent from a washhouse was contaminated. As a matter of fact, this washhouse drained into an open gully which ran through the streets and finally emptied itself into a fissure in the earth. The municipality of Cerisiers, acting together with that of Paris, at once took steps to prevent any further contamination of the town water-supply by this effluent. Dr. Roux observed that owing to the new plan the town of Paris had become, from a hygienic point of view, the protector of vast tracts of country the sanitary condition of which was of no less importance to Paris than to the individual districts themselves.

A New Anti-tuberculous Serum.

At the meeting of the Academy of Medicine held on March 17th M. Kelsch laid before the society the results of some researches which had been carried out by Dr. Viguier de Maillaine of Nimes. He had been struck by the power of resistance to human tuberculosis which is manifested by poultry and he thought that this power was probably due to some force inherent in their serum. Moreover, he had failed to cultivate the bacillus of Koch in the serum of the fowl. He therefore carried out a series of experiments and convinced himself that the serum of the fowl, prepared after a method of which he was enabled to give the exact technique, had a very real value both curative and immunising as regards tuberculosis in the guinea-pig. After having verified the harmlessness of the serum both by a trial on himself and upon a member of his own family who was in robust health, Dr. Viguier de Maillaine tried the treatment on six patients affected with tuberculosis. All the patients were in the first or second stage of the disease. After 15 injections two were almost cured, three had markedly improved, and one was neither better nor worse. A sensation of warmth and pains behind the sternum followed the injections, the latter symptom being more acute in direct ratio to the stage at which the tuberculous lesions had arrived. No inflammatory reaction occurred at the seat of inoculation and the treatment gave the best results in quiet cases of tuberculosis. In acute forms and in those with pyrexia no permanent results were obtained, but in all cases the results were good. The cough and expectoration diminished and the nutrition improved, while even if the serum showed no bactericidal power it seemed to build up the patient in much the same way as meat juice does when administered by the stomach, although the serum was the more powerful.

March 24th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Treatment of Tuberculosis in New York.

MANY suggestions have been made for the treatment of the tuberculous poor of New York city. The tuberculosis committee of the Charity Organisation Society advocates the erection of a tuberculosis hospital to accommodate a very large number of patients and at a large cost. Others recommend hospitals in the city and sanatoriums outside. The New York Board of Health thinks that such experiments would prove too expensive and is of the opinion that the establishment of a tuberculosis camp at a convenient distance from the city would best meet the necessities of the situation. It is therefore proposed that a piece of ground of sufficient size and of healthy location should be chosen about 50 miles from New York, and a camp of strong but inexpensive tents should there be formed, each tent to hold two or three persons and to cost 100 dollars.

Attack on Tenement House Reform in New York City.

The difficulties in the way of properly housing the poor are greater, perhaps, in New York than in any city of the world. The population is dense, whilst space is limited. Great reforms have been introduced in the construction of tenement houses within the past few years and especially by means of a Bill which passed the New York State Legislature about two years ago. A determined effort is now being made to nullify the effect of these reforms by the passage of Bills now pending before the cities' committees of the Legislature. The New York Academy of Medicine has passed the following resolution: "Whereas strenuous efforts are being made to induce the Legislature to utterly undo the great advances made in recent years in tenement house reform and sanitation and to prevent the permanent carrying into effect of the great improvements in the construction and management of tenement houses in New York and Buffalo which may have been made possible by the recent Tenement House Law; and whereas pulmonary tuberculosis is practically epidemic in the city of New York, there being 8000 deaths and 20,000 cases annually; and whereas the lack of light and air in the rooms of the great masses of the people is one of the most potent causes in increasing the prevalence of this and other communicable diseases and constitutes a serious menace to health and morality, be it resolved that the New York Academy of Medicine deplores any weakening of the present tenement house laws, and urgently requests the Legislature to permit no changes to be made that will in any way decrease the amount of light and air available for the people living in such houses, or in any way to take a backward step in regard to their sanitary condition."

A Patent Medicine Bill.

A Bill has been introduced into the Legislature of New York State framed with the intention to prevent fraud in the advertisement and sale of patent medicines, medical foods and beverages, and merchandise. The first section of this Bill reads as follows: "No conversation, letter, report, opinion, publication, or memorandum or copy thereof of any description whatsoever, and no picture or illustration of any nature or description which states or represents or purports to state or represent the quality and effect, merits or demerits of any patent medicine, or of any medical preparation, liquid, or beverage distributed for public sale shall be posted, published, or circulated in any manner, in any city, town, or village of this State unless the same shall previously have been examined, approved, and certified by the board of health of the city, town, or village in which the same is published or circulated as a true and correct statement or representation of the medicinal qualities and probable physical effect of the patent medicine, preparation, liquid, or beverage, of and about and in reference to which the writing, picture, or illustration is made, and unless the person alleged to have made a representation shall verify the fact of having made the same under oath and the verification when made is filed in the office of the clerk of the county in which the person making the same resides." This Bill is certainly sufficiently drastic and if enacted will have a deterrent effect upon the business of proprietary medicine manufacturers. Some such legislation is undoubtedly badly needed in all parts of the United States, where the inhabitants consume patent medicines in prodigious quantities, frequently to their injury.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

The Plague.

ON Jan. 27th a case of bubonic plague was discovered in Fremantle, West Australia. The patient was isolated and the "contacts" were quarantined. Of these "contacts" two became affected, one fatally. It is believed that the

source of infection was from fleas from infected rats. Cases of plague have also occurred at Rockhampton and Brisbane in Queensland, one, that of a Chinaman, being fatal. The restrictions on shipping &c., have been reinforced at the other State ports and the destruction of rats has been renewed. In consequence of the drought grain is now being imported into Australia, especially from San Francisco and India, both of which places have been declared plague-infected and the shippers object to the restrictions of the board of health, which provide that vessels which have taken on board fodder or grain of any kind at, or forwarded from, any port infected or suspected of being infected with plague are required to discharge in the stream with such precautions to avoid the landing of rats as in each case may be deemed advisable by the board and afterwards to be fumigated for the destruction of rats before going alongside. The board, however, very wisely insists on the regulations being strictly enforced.

Tuberculosis in Victoria.

At a recent meeting of the board of public health of Victoria the chairman, Dr. D. A. Gresswell, quoted statistics which showed that there had been a remarkable decrease in the number of cases of tuberculous disease in Victoria during the last 15 years. The decrease had been principally in cases occurring in the metropolis. In 1888 there were 27·8 deaths per 10,000 of the population in Melbourne from various forms of tuberculous disease; last year there were only 18 deaths per 10,000 from the same cause. Throughout the whole State the deaths from tuberculosis had fallen from 18 per 10,000 in 1888 to 15 per 10,000 last year.

Infectious Disease in Victoria.

A return presented to the board of health of Victoria showed that during the fortnight ending Jan. 17th there was a substantial decrease in the number of cases of infectious diseases reported to the board as compared with the number reported in the corresponding period of last year.

Antitoxin Treatment of Diphtheria at Sydney.

Of the last 300 cases of diphtheria treated at the Children's Hospital, Sydney, before antitoxin was employed 158 died, or a percentage mortality of 52·7. The percentage mortality of all the cases during 1899, 1900, and 1901 was 12·65; last year the percentage was 12·57.

Adulteration of Food.

Both in New South Wales and in Victoria the health authorities have been giving a great deal of attention to the subject of the adulteration of food. In Victoria an extensive series of analyses have shown that adulteration is very prevalent, especially in non-alcoholic beverages, and the use of preservatives of all kinds in perishable foods is almost universal. In New South Wales, as previously mentioned, the board of health gazetted a regulation, under the Public Health Act, prescribing the degree of admixture of preservatives with food. The regulation was practically prohibitive and it has now been rescinded in response to an agitation by the butter makers, butter exporters, and condensed milk manufacturers. The board of health has also asked those interested to state what they think would be fair restrictions and their recommendations are now under consideration. The cordial makers urged that saccharin should be allowed as a substitute for sugar and that some preservative should be allowed as they could not send their products into the country with the quality retained without a preservative. The manufacturers of concentrated milk say that they cannot carry on business without using some preservative. Concentrated milk is a product peculiar to Australia. It differs from condensed milk in being pasteurised instead of sterilised. It has no sugar added and is sold in bulk in vessels from which air is not excluded. The customer dilutes it with water as required. Boric acid is, in all cases, added to preserve it. The result of analyses by the officers of the board shows that it is difficult to get any article of food that is not adulterated or preserved with some chemical of a more or less deleterious character. Lime-juice, raspberry vinegar, fruit syrups, tomato sauce, and such articles are for the most part purely artificially prepared mixtures—frauds, in fact—and contain unknown, and often large, quantities of salicylic acid.

Obituary.

Dr. Charles Rorke, who had practised for 23 years at North Sydney, died suddenly from heart disease on Jan. 20th. He was very popular and had a very large practice. He took a keen interest in the North Shore Hospital and was a member of its medical staff.—Dr. Robert John Allan of Balmain died while on a holiday in Hobart. The remains were brought home and buried in Waverley Cemetery. Dr. Allan was a graduate of Edinburgh University and after coming to New South Wales was for some time medical superintendent of St. Vincent's Hospital, Sydney. Then he practised at Raymond Terrace for eight years. Next he settled in Dulwich Hill for seven years. In 1899 he joined the medical staff of the Balmain United Friendly Societies' Dispensary. He was for three years a member of the honorary staff of the Balmain Hospital, but recently resigned.

Feb. 6th.

Obituary.

WILLIAM SAUL, M.D. ST. AND., M.R.C.S. ENG., L.S.A.

THE somewhat sudden death of this well-known practitioner took place at his residence, Dalblair, Boscombe, near Bournemouth, on March 11th, from cardiac failure supervening upon an attack of laryngitis. Dr. Saul had been in delicate health for several years and for the last 13 years had resided at Boscombe, having been advised on account of his health to leave London, where for many years he had a practice in the neighbourhood of Bedford-square.

A native of Banbury, Oxfordshire, and a student at University College Hospital, London, where he took honours in several subjects, he qualified in 1862, obtaining the degree of Doctor of Medicine at St. Andrews University and the diplomas of M.R.C.S. Eng. and L.S.A. Early in his professional career he was appointed senior medical officer to St. Pancras Infirmary. On resigning this appointment he entered into private practice and soon gained a wide reputation. During his residence at Boscombe Dr. Saul took a deep interest in parochial affairs, and he had been a churchwarden at St. John's Church for the last five years. The funeral service, which took place on Saturday, March 14th, at St. John's Church, was very largely attended by his professional brethren in the locality and the residents of the neighbourhood. His remains were afterwards laid to rest in the East Cemetery, Boscombe. Dr. Saul married in 1884 Mary, daughter of the late Sir William Brown, Bart., of Colstoun, Haddingtonshire, who, with four children, survives him.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—V. E. M. Bennett (Section II.), Royal Free Hospital; L. Courtauld (Section II.), Middlesex Hospital; T. G. Longstaff (Sections I. and II.), Oxford and St. Thomas's Hospital; S. Northwood (Sections I. and II.), Birmingham; and W. A. G. Stevens (Sections I. and II.) and F. J. Turner (Sections I. and II.), Guy's Hospital.

Medicine.—J. Ewing, Leeds; B. C. Ghosh (Sections I. and II.), Cambridge; W. P. Jones (Section I.), Sheffield; and G. B. S. Soper (Section II.), and W. A. G. Stevens (Sections I. and II.), Guy's Hospital.

Forensic Medicine.—S. Bentley, Sheffield; L. Courtauld, Middlesex Hospital; G. Dewick, St. Thomas's Hospital; J. Ewing, Leeds; R. Gauld, London Hospital; B. C. Ghosh, Cambridge; J. D. Keir, St. Mary's Hospital; and G. B. S. Soper and W. A. G. Stevens, Guy's Hospital.

Midwifery.—C. E. Adams, Guy's Hospital; E. H. Drinkwater, Liverpool and St. Bartholomew's Hospital; J. H. Harrison, Sheffield; and W. A. G. Stevens, Guy's Hospital.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—V. E. M. Bennett, L. Courtauld, R. Gauld, T. G. Longstaff, G. B. S. Soper, and W. A. G. Stevens.

FOREIGN UNIVERSITY INTELLIGENCE.—*Bologna:* Dr. D. Della Rovere has been recognised as *privat-docent* of Pathological Anatomy.—*Gratz:* Dr. von Hacker of Innsbruck has been appointed to the chair of Surgery and Dr. Kreibich to that of Dermatology.—*Greifswald:* Dr. Bleibtreu of Bonn has been appointed to the chair of Physiology in succession to the late Dr. Landois.—*Innsbruck:* Dr. Merk has been appointed to the chair of Dermatology.—*Jena:* Dr. Krönig of Leipsic has been appointed Director of the Gynæcological Clinic.—*Kiel:* Dr. Alfred Gross has been recognised

as *privat-docent* of Internal Medicine and Dr. Julius Raecke as *privat-docent* of Psychiatry.—*Königsberg:* Dr. Stenger has been recognised as *privat-docent* of Surgery.—*Marburg:* Dr. Römer has been recognised as *privat-docent* of Hygiene.—*Padua:* Dr. Carlo Maurizio Belli has been recognised as *privat-docent* of Hygiene.

PRESENTATIONS TO MEDICAL PRACTITIONERS.—On Feb. 27th Mr. C. H. Powers, M.R.C.S. Eng., L.R.C.P. Lond., was presented by the rector of Gosforth, on behalf of 250 subscribers, with a testimonial on his leaving the neighbourhood where he has practised for the past eight years. In addition to an illuminated address Mr. Powers received a silver tea service, an oak roll-top desk and a purse containing 65 sovereigns.—Mr. G. Black, M.B., B.S. Lond., M.R.C.S. Eng., L.S.A., on leaving Hurstpierpoint has been presented by his friends and patients with a cheque for £130 in recognition of his unselfish labour on behalf of the sick and suffering.—Mr. Thomas Lapraik, M.D., F.F.P.S. Glasg., has recently been presented with his portrait in oils on the occasion of his retiring from the chairmanship of the Glasgow Athenæum, a post which he has held for five years.—At the sixth annual meeting of the South Wales and Monmouthshire Branch of the Sanitary Inspectors' Association, which was held at Bargoed on March 7th, Mr. W. Williams, M.D., D.P.H. Oxon., M.R.C.S. Eng., the medical officer of health of the county of Glamorgan, who has been president of the branch since its formation six years ago, and his wife were presented with a massive silver tea service and tray, while two silver cups were presented to their children.

IRISH MEDICAL SCHOOLS AND GRADUATES' ASSOCIATION.—Dr. P. S. Abraham, the President, took the chair at the annual dinner of the Irish Medical Schools and Graduates' Association which was held on March 17th (St. Patrick's Day) in the International Hall of the Café Monico, London. The occasion attracted a numerous assembly and covers were laid for about 200 guests. The company present included Mr. H. A. Grainger (Agent-General in London for South Australia), Sir R. Ball, Sir J. Colomb, M.P., Mr. J. H. Campbell, M.P. (Solicitor-General for Ireland), Mr. Henniker Heaton, M.P., Inspector-General W. H. Lloyd, R.N., Deputy-Director-General A. H. Keogh, C.B., Deputy-Inspector-General A. G. Delmege, M.V.O., Surgeon-General C. M. Cuffe, C.B., Mr. A. E. J. Barker, and Mr. P. J. Freyer. Dr. H. Macnaughton-Jones proposed the toast of "Our Guests," which was acknowledged by Sir J. Colomb, who commented on the advance of progress in regard to social welfare in Ireland and devoted some time to discussing the undesirable conditions which existed in the country districts in Ireland in connexion with the medical profession. He remarked that it was a very serious matter and thought that he would be excused for mentioning such a question on the ground that the health of the people was of such great importance. He considered that public opinion should be brought to bear to break down the prejudices of local rural authorities and pointed out that fair-play would be for the benefit of the people. He particularly emphasised the fact that there was in the election of medical men to the different posts in certain parts of Ireland evidence of undue family influence. The meeting concluded after many speeches had been delivered and much music and singing had been enjoyed.

THE ADAMS-WYLIE HOSPITAL, BOMBAY.—The Adams-Wylie Hospital for the Poor was opened on July 26th, 1902 by Lord Northcote, the Governor of Bombay. The hospital, which is situated at the end of Guilder-street, Bombay, has been erected by Mrs. Adams-Wylie in memory of her late husband, Lieutenant C. H. B. Adams-Wylie, I.M.S., who died from enteric fever at Bloemfontein, South Africa, on June 2nd, 1900. While serving in India Lieutenant Adams-Wylie was actively engaged in inoculation against plague. At that time the authorities in Bombay offered a reward of four annas (5*d*.) to every person undergoing inoculation, and as a further inducement Lieutenant Adams-Wylie and his wife offered food, the result being that within eight months he inoculated nearly 8000 persons. Mrs. Adams-Wylie accompanied him to South Africa and acted as a nurse during the time she was at the front. After his death she returned to India and devoted herself to nursing work among the pauper class, especially "roadside cases" suffering from the direct or indirect effects of famine. In November, 1901, she wrote to the President of the Bombay municipal corporation offering to lay out 22,000 rupees on the conversion of certain buildings into hospitals for such patients, but nothing was done; whereupon she obtained from the Improvement Trust a site in Guilder-street and built the hospital at her own expense. It consists of three wards which will accommodate 50 patients and is provided with an operating theatre. Subscriptions are invited for carrying on the work; more than 20,000 rupees have been already collected, chiefly from native donors.

MEDICAL MAGISTRATE.—Mr. C. E. Humphreys, C.C., M.R.C.S. Eng., L.S.A., has been appointed by the Lord Chancellor a justice of the peace for the county of Montgomery.

THE END OF A DISPUTE.—For some time past an action has been pending between Mr. Egerton C. A. Baines and Dr. W. Longworth Wainwright, both living at Henley-on-Thames, the former having instituted proceedings against the latter for slander. We have pleasure in reporting that this dispute is now at an end. Mr. Baines has withdrawn all allegations against Dr. Wainwright and proceedings have been stayed.

THE YARROW CONVALESCENT HOME FOR CHILDREN OF THE BETTER CLASS, BROADSTAIRS.—The total number of children admitted to this institution during the year ending Dec. 31st, 1902, was 942, of whom 451 were boys and 491 girls. The average cost per child during the year was £1 1*s*. 4*d*. per week. According to the statement of accounts the income for 1902 was £4421 and the expenditure £4461.

IDIOTS AND PARISH RELIEF.—At the meeting of the Wellington (Somerset) board of guardians held on March 12th, Mr. Preston Thomas, the Local Government Board inspector, expressed the opinion that one of the rules which provided that out-relief shall not be given in respect of any idiot or imbecile was a most desirable one, for if idiots and imbeciles remained outside the workhouse there would be generation after generation of imbeciles, but if they were placed in a workhouse this danger would be greatly lessened.

THE LATE DR. T. LL. PARRY.—Dr. Thomas Llewellyn Parry died at De Aar, Cape Colony, on Feb. 3rd, from acute dysentery. Dr. Parry, who was 33 years of age and whose connexion with South Africa dates from 1896, was in practice at East London Springs near Johannesburg, Mount Fletcher, Swellendam, and Uniondale, Cape Colony. On Jan. 1st he took up his duties at Naauwpoort Cape Colony, in conjunction with Dr. Baird, as medical officer of the railway and it was at this place that the malady first showed itself.

THE INEBRIATES ACT.—At the Cardiff police-court on March 20th the stipendiary magistrate (Mr. T. W. Lewis) discharged a woman whom he had some weeks previously committed to an inebriates' home for three years, owing to the fact that the local authority had omitted to find an institution for her reception. Mr. Lewis remarked that a court of summary jurisdiction has power to send an inebriate to a home, but the legislature had not provided an inebriates' home and the local authority had omitted to make provision; the Act, therefore, at Cardiff became practically a dead letter.

THE MOUNT VERNON HOSPITAL FOR CONSUMPTION, HAMPSTEAD, N.W., AND NORTHWOOD.—The medical report of this institution for the year ending March 2nd, 1903, states that although very many advanced cases were admitted the death-rate was the lowest on record—namely, 1·5 per cent., eight being the total number of deaths. Five of these patients were admitted in a moribund condition and died within ten days—two, in fact, dying on the day of admission. Of the 547 patients admitted during the year 503 were cases of pulmonary tuberculosis and of these 38 did not remain so long as three weeks and five died within ten days.

CHELTENHAM GENERAL HOSPITAL.—The annual general meeting of the subscribers to this institution was held on March 18th, under the presidency of Colonel Croker King. The medical report stated that during 1902 the in-patients numbered 952, an increase of 56 compared with 1901. 5119 out-patients were treated and at the branch dispensary 3879 patients were treated, an increase of 131 compared with the previous year. The financial statement was satisfactory and showed an increase in subscriptions,

but church and Hospital Saturday collections had decreased. Legacies amounting to £11,545 and £5000 had been received from the late Mr. J. W. Howe and Mrs. Disney Thorp respectively.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 18TH.

Proposed Vaccine Station for Scotland.

Mr. WEIR asked the Lord Advocate, in view of the insufficient supply of animal lymph for vaccination purposes in Scotland, whether he would consider the advisability of establishing in Scotland an animal vaccine station and laboratory for the preparation of glycerinated calf lymph similar to the establishment under the control of the Local Government Board, London.—The LORD ADVOCATE replied: I cannot assent to the view that the supply of animal lymph for vaccination purposes in Scotland has been found to be insufficient. But a proposal to establish in Scotland a station for the preparation of glycerinated calf lymph has been made to the Secretary for Scotland and will be considered.

Bad Teeth among Army Recruits.

Mr. WEIR asked the Secretary of State for War, in view of a statement contained in the recently issued report of the inspector-general of recruiting to the effect that in the reports from manufacturing districts stress was laid upon the number of men rejected for bad teeth, whether he would state the percentage of men who were rejected for this cause during the year under review.—Mr. BRODRICK replied: The number of men rejected for bad teeth in 1902 was 4558 and the ratio per 1000 inspected was 52·03. This number is nearly double the figures for 1901.

THURSDAY, MARCH 19TH.

Introduction of a Medical Member.

The medical Members of the House received a recruit to-day by the introduction of Dr. C. F. Hutchinson, the new representative of the Rye division of Sussex.

The Statutory Flash Point of Petroleum Oil.

Mr. WEIR introduced at this sitting his Bill for raising the statutory flash point of petroleum oil. Having regard to the position of the Bill on the orders of the House there is little prospect of its being passed or even of its being discussed.

Medals for the Nurses on the "Maine."

Mr. TENNANT asked the Secretary of State for War whether, in view of the fact that the American orderlies and male nurses on the hospital ship *Maine* had received the war medal for their services to our sick and wounded in South Africa and China, he would state why the five certificated American female nurses in charge had been refused the medal.—Mr. BRODRICK replied: Instructions were despatched to the principal ordnance officer, Woolwich, on March 13th, to issue these medals.

Sanitary Inspectors and Government Property.

Colonel LOCKWOOD asked the Secretary to the Treasury if he would explain why the sanitary inspector at Waltham Abbey was not allowed to visit the Government houses and cottages as well as the houses of private owners.—Mr. HAYES FISHER replied: Under Clause 327 of the Public Health Act of 1875 War Department property is exempted from disturbance or interference on the part of the local authority. It does not appear moreover that the local sanitary inspector has ever made any attempt to visit Government houses at Waltham.

Physical Training of School Children.

While the House was in Committee of Supply Dr. MACNAMARA raised a debate on the new course of physical training for public elementary schools. He condemned the course as a purely military one and unsuitable for school children. He said that it consisted of about 75 per cent. of leg exercises and 25 per cent. of arm exercises and there were no exercises for the muscles of the neck, side, abdomen, or chest, and above all there were no breathing exercises.—Sir JOHN GORST also condemned the new course, saying that it was distinctly retrograde.—Mr. SHAW STEWART recommended the appointment of a committee including medical experts to draw up a model course of physical training on the most careful lines.—Sir WILLIAM ANSON, in his reply for the Board of Education, said that the Department was well aware of the difficulties of the new course. They had discovered that the local conditions and circumstances of a school might make it impossible to carry it out and that it was not suitable for girls. The Scottish Education Department had recently been inquiring into the subject and the results of its inquiry would receive the closest attention, and if it were necessary a departmental committee would be appointed to consider the best form of physical training for school children.

MONDAY, MARCH 23RD.

Dietary Arrangements in the Royal Navy.

Mr. HARMSWORTH asked the Secretary to the Admiralty whether the revision in the dietary scale to take effect next October would be accompanied by improvements in the system of cooking and serving food now in force in the royal navy.—Mr. ARNOLD FORSTER replied: There are three cookery schools for the navy, one at each of the principal home ports. Ships' cooks are specially trained at these schools in the best methods of cooking whatever articles are supplied in navy rations. Improved arrangements have been made for preparing tea which will enable each mess to prepare its own. Arrangements have been made for improving the method of serving the food by adding knife, fork, basin, plate, and improved spoon to the present scale of seamen's mess utensils.

The Navy Medical Service.

Mr. BOLAND asked the Secretary to the Admiralty whether it was proposed to improve the Naval Medical Department with respect to promotion and pay so as to place it on a like footing with the Army Medical Service.—Mr. ARNOLD FORSTER replied: On March 24th, 1902, an order in council was issued raising the pay of naval medical officers and placing it practically on an equality with that of officers of the Royal Army Medical Corps. Promotion both in the medical branch of the navy and in the Royal Army Medical Corps is by seniority until the administrative grades are reached, when promotion by selection is practised. Special promotions for conspicuous professional merit or for war service are made in the Navy Medical Service. Owing to the great differences between the navy and army it is impossible to conduct the medical services on exactly similar lines.

WEDNESDAY, MARCH 25TH.

Rejections of Navy Recruits for Bad Teeth.

Mr. WEIR asked the Secretary to the Admiralty whether he would state the number of recruits for the navy who were rejected in 1902 on account of bad teeth.—Mr. ARNOLD FORSTER replied: The statistics in the possession of the Admiralty do not enable me to give exact figures on this particular point, but it is estimated that at least one recruit in every ten is rejected on account of bad teeth.

Vaccination Questions.

Mr. WEIR asked the President of the Local Government Board whether in considering any further legislation in regard to vaccination arrangements would be made such as would enable a parent when registering the birth of a child to obtain a certificate of exemption by making a declaration to the effect that he conscientiously believes vaccination to be prejudicial to the health of the child.—Mr. LONG replied: The Prime Minister intimated in reply to a question a few weeks ago that except for the renewal of the existing Vaccination Act it was not intended to propose legislation on the subject of vaccination during the present session. In these circumstances perhaps the hon. Member will excuse me if I do not go into matters such as that raised in the question at the present time.

Mr. WEIR asked the Lord Advocate if he would state from whom the public vaccinators in Scotland obtained their supply of animal lymph.—The LORD ADVOCATE replied: There are no public vaccinators in Scotland, as the term is understood in England. Parochial vaccinators, whose duties are confined to vaccinating defaulters and the children of paupers, receive free, on application, supplies of glycerinated calf-lymph from the Local Government Board for Scotland.

BOOKS, ETC., RECEIVED.

AMERICAN GYNECOLOGICAL SOCIETY (J. Riddle Goffe, M.D., Secretary, No. 29, West Forty-sixth-street, New York).

Transactions of the American Gynecological Society. Volume xxvii. For the year 1902. Price not stated.

AMERICAN ORTHOPEDIC ASSOCIATION (Dr. Joel E. Goldthwait, Chairman, Publication Committee, 372, Marlborough-street, Boston, U.S.A.)

Transactions of the American Orthopedic Association. Sixteenth Session, held at Philadelphia, June 5th, 6th, and 7th, 1902. Vol. xv. Price not stated.

AMERICAN SURGICAL ASSOCIATION (Recorder of the Association, 503, Spruce-street, Philadelphia, U.S.A.). (For sale by WILLIAM J. DORNAN, Philadelphia.)

Transactions of the American Surgical Association. Volume the twentieth. Edited by Richard H. Harte, M.D., Recorder of the Association. Price not stated.

A Complete List of the Officers and Fellows of the American Surgical Association, together with an Alphabetically arranged Index of Vols. i.-xx.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent Garden, W.C.

The Refraction of the Eye and the Anomalies of the Ocular Muscles. By Kenneth Campbell, M.B. Edin., F.R.C.S. Eng., Surgeon to the Western Ophthalmic Hospital, Surgeon-Oculist to His Highness the Maharajah and Gaekwar of Baroda. Price 5s. net.

GEE AND CO., 34, Moorgate-street, E.C.

Medical Practitioners' Accounts. By J. Henry May, A.S.A.A. Price 3s. 6d.

GRIFFIN, CHARLES AND COMPANY, Limited, Exeter-street, Strand, W.C.

Technical Mycology: the Utilisation of Micro-organisms in the Arts and Manufactures. By Dr. Franz Lafar, Professor of Fermentation-Physiology and Bacteriology in the Imperial Technical High School, Vienna. Translated by Charles T. C. Salter. Vol. ii. Eumycetic Fermentation, Part I. Price 7s. 6d.

J. B. LIPPINCOTT COMPANY, Philadelphia and London.

Therapeutics of Infancy and Childhood. By A. Jacobi, M.D. LL.D. Third edition. Price 12s. net.

LAMERTIN, HENRI, 20, Rue du Marché-au-Bois, Bruxelles.

Manuel de Bactériologie Clinique. Par M. Funck, Chef du Laboratoire de Bactériologie de l'Université de Bruxelles, Directeur de l'Institut Provincial de Sérotherapie. Deuxième édition. Price not stated.

LONGMANS, GREEN AND CO., 39, Paternoster-row, E.C.

Colonial and Camp Sanitation. By George Vivian Poore, M.D. Lond., F.R.C.P., Professor of the Principles and Practice of Medicine, University College, London, Physician to University College Hospital, &c. Price 2s. net.

Liverpool School of Tropical Medicine. Memoir ix. Report on Malaria at Ismailia and Suez. (Published for the University Press of Liverpool). By Ronald Ross, F.R.C.S., D.P.H., F.R.S., C.B., Sir Alfred Jones Professor of Tropical Medicine at University College, Liverpool. Price 1s

MACDOUGALL, ALEX., 68, Mitchell-street, Glasgow.
Transactions of the Glasgow Obstetrical and Gynæcological Society. Volume iii. Sessions 1900-1901, 1901-1902. Price not stated.

NATIONAL HOUSING REFORM COUNCIL, 432, West Strand, W.C.
The Housing Handbook. By W. Thompson, Richmond (Surrey) Town Council, author of "Housing of the Working Classes," and "Richmond Official Housing Report." Price, art paper edition, 6s. net; bound in limp cloth, 2s. 6d. net.

NAUD, C., 5, Rue Racine, Paris.
Manuel de la Prostatectomie Périnéale pour Hypertrophie. Par le Dr. Robert Proust, Prosecteur à la Faculté. Price fr. 4.

SCOTTISH MEDICAL AND SURGICAL JOURNAL, LIMITED, 43, Castle-street, Edinburgh.
The Scottish Medical and Surgical Journal. Edited by Norman Walker, M.D., F.R.C.P. Edin., and Harold J. Stiles, M.B., F.R.C.S. Edin. Volume xi. (July to December, 1902.) Price not stated.

SMITH, ELDER, AND CO., 15, Waterloo-place, S.W.
Diseases and Injuries of the Eye, with their Medical and Surgical Treatment. By George Lawson, F.R.C.S. Eng., Surgeon Oculist-in-Ordinary to Her Majesty the late Queen Victoria; Consulting Surgeon to the Royal London Ophthalmic Hospital and to the Middlesex Hospital. Sixth edition, revised and in great measure re-written by Arnold Lawson, F.R.C.S. Eng., Assistant Surgeon to the Royal London Ophthalmic Hospital. Price not stated.

SPRINGER, JULIUS, Monbijouplatz, 3, Berlin, N.
Der Herzmuskel und seine Bedeutung für Physiologie, Pathologie, und Klinik des Herzens. Von Dr. Ehrenfried Albrecht, Arzt in Berlin. Price M. 14.

STOCK, ELLIOT, 62, Paternoster-row, E.C.
The Victualling of the Royal Navy: Past, Present, and Future. By Alexander Turnbull, M.D., Inspector-General of Hospitals and Fleets (retired). Price 1s.

TREAT, E. B. AND CO., New York.
Clinical Treatise on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Prof. Dr. Carl von Noorden, Physician in Chief to the City Hospital, Frankfurt a.M. Authorised American Edition, translated under the direction of Boardman Reed, M.D. Part III., Membranous Catarrh of the Intestines (Colica Mucosa). By Prof. Dr. Carl von Noorden, with the collaboration of Dr. Carl Dapper. Price 50 cents.

WILSON, EFFINGHAM, Royal Exchange, E.C.
How and Where to Insure. By Charles Cox ("Thrift" of the *Empire Review*). Price 1s. net.

WOOD, WILLIAM AND CO., New York.
The Proceedings of the Charaka Club. Volume i. Price not stated.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, for publication in the next number.*

BARNES, H. J., Lieut.-Col. R.A.M.C., has been appointed Secretary to the St. Andrew's Ambulance Association, Glasgow.

BRISCOE, WILLIAM THOMAS, M.D., M.Ch. Dub., has been appointed Medical Officer for the Pewsham District by the Chippenham Board of Guardians.

BURGESS, MILDRED M., M.B. Lond., has been appointed Assistant House Surgeon to the Victoria Hospital for Sick Children, Hull.

BURNET, JAMES, M.A., M.B. Edin., M.R.C.P. Edin., has been appointed Clinical Tutor to the Extra-mural Medical Wards, Royal Infirmary, Edinburgh.

CHADWICK, G. M., M.D., F.R.C.P., has been appointed Honorary Consulting Physician to the Leeds Public Dispensary.

FINCH, HUGH EARNSHAW, M.B., B.Ch. Oxon., D.P.H., has been appointed a District Health Officer in New Zealand for the purposes of the Public Health Act, 1900.

FITTON, HERBERT, L.R.C.P. Edin., M.R.C.S., has been appointed Honorary Surgeon to the Dewsbury and District Infirmary.

HANNAH, NATHAN, L.R.C.P. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory Act for the Ashton-in-Makerfield District of the county of Lancaster.

JONES, FRANCIS FREDERICK, M.R.C.S., L.S.A., has been appointed Medical Officer for the Second District by the Bath Board of Guardians.

LAMBELLE, F. W., M.B., B.S. Durh., has been appointed Lecturer in Physiology to the Hong-Kong College of Medicine for Chinese.

MARTIN, ANTONY ALEXANDER, M.D. Lond., B.S., M.R.C.S. Eng., L.R.C.P. Lond., D.P.H., has been appointed Medical Officer to the Eastbourne and Seaside District of the Eastbourne Union.

MCGRATH, M., L.R.C.P., L.R.C.S. Irel., has been appointed Visiting Medical Officer to the Limerick Workhouse.

ROBERTSON, MONICA, L.M., M.B., B.S. Durh., has been appointed Resident Medical Officer to the Sherwood Forest Sanatorium for Consumptives, Mansfield, Notts.

TELLING, WALTER H. MAXWELL, M.D., B.S. Lond., M.R.C.P., has been appointed Honorary Physician to the Leeds Public Dispensary.

TOMS, PHILIP MOYSEY, M.R.C.S. Eng., L.S.A. Lond., has been appointed District Medical Officer and Public Vaccinator to the Wood Church District of the Tenterden Union, vice Mr. Edward B. Terry, resigned.

TRAYLEN, C. L., L.R.C.P. Lond., M.R.C.S. Eng., has been appointed House Physician to the Royal Hospital for Diseases of the Chest, City-road, London, E.C.

WOODFORD, E. RUSSELL, M.D., M.S., M.R.C.S., L.S.A. Lond., has been re-appointed Medical Officer of Health to the Ventnor Urban District Council.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRMINGHAM AND MIDLAND FREE HOSPITAL FOR SICK CHILDREN.—Resident Medical Officer; also Resident Surgical Officer. Salary in each case £60 per annum, with board, washing, and attendance.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Clinical Assistants.

DUNDEE ROYAL LUNATIC ASYLUM.—Junior Medical Assistant. Salary £100, with board and lodgings.

ECCLESALL BIERLOW UNION.—Resident Medical Officer. Salary £130 per annum, with board, washing, and apartments.

ESSEX AND COLCHESTER HOSPITAL.—Honorary Physician.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark.—House Physician, also House Surgeon. Salary £80 respectively, with board, residence, and washing. Also Assistant House Surgeon. Salary £70, with board, residence, and washing. Also Medical Radiographer. Honorarium £25 per annum.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months. Honorarium of £25.

LIVERPOOL INFIRMARY FOR CHILDREN.—Assistant House Surgeon, for six months. Salary £25, with board and lodging.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Anæsthetist. Honorarium 25 guineas per annum.

MIDDLESEX HOSPITAL, W.—Assistant Obstetric Physician.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—Demonstrator in Physiology. Salary £80 per annum.

NEWCASTLE-ON-TYNE ROYAL INFIRMARY.—Senior House Physician. Salary £100 per annum, with board, lodging, and washing.

NORTH-EASTERN HOSPITAL FOR CHILDREN, Hackney-road, N.E.—Resident Medical Officer. Salary £120 per annum, with board, residence, and washing. Also Casualty Officer. Salary at rate of £100 per annum, with lunch.

OXFORD, WARNEFORD ASYLUM.—Assistant Medical Officer. Salary £100, with board, &c.

RADCLIFFE INFIRMARY, Oxford.—House Surgeon, unmarried, for six months. Salary £40, with board, lodging, and washing.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Clinical Assistants.

ST. THOMAS'S HOSPITAL.—Superintendent of the Clinical Laboratory.

SUNDERLAND INFIRMARY.—House Surgeon. Salary £100, increasing, with board and residence.

SUSSEX COUNTY HOSPITAL.—House Physician, unmarried. Salary £80 per annum, with board and residence.

WANDSWORTH AND CLAPHAM UNION, HOME FOR AGED AND INFIRM, Church-lane, Tooting. Assistant Medical Officer, unmarried. Salary £150 per annum, rising to £150, with apartments, board, lodging and washing.

WEST HAM UNION NEW INFIRMARY, Whipps-cross-road, Leytonstone, N.E.—Assistant Medical Officer. Salary £150 per annum, with residential allowance.

WEST NORFOLK AND LYNN HOSPITAL, King's Lynn.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

WOLVERHAMPTON EYE INFIRMARY.—House Surgeon. Salary £70 per annum, with rooms, board, and washing.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £110 a year, with board, lodging, and attendance.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies as Certifying Surgeon under the Factory and Workshop Act at Cradley Heath in the County of Stafford, at Boherboy in the County of Cork, at Warboys in the County of Huntingdon, and at Bungay in the County of Suffolk.

Births, Marriages, and Deaths.

BIRTHS.

BRAINE-HARTNELL.—On the 21st inst., the wife of Christopher Braine-Hartnell, M.R.C.S., L.R.C.P., of the Cotswold Sanatorium, near Stroud, of a son, who only survived a few hours.

FULLER.—On March 17th, at Tollington-park, the wife of J. R. Fuller, M.D. Durh., of a son.

LACKIE.—On March 25rd, at Randolph-crescent, Edinburgh, the wife of J. Lamond Lackie, M.D., F.R.C.P. Edin., of a son.

MITCHELL.—On March 20th, at St. Vincent's, Guildford, the wife of Arthur M. Mitchell, M.D. Cantab., of a son, prematurely (still-born).

MARRIAGE.

WOOD—SMITH.—On March 18th, at St. John's Church, Ranmoor, Sheffield, James Miller Swanson Wood, M.B., Ch.B. Aberd., of Rotherham, to Edith, daughter of Frank and Mrs. Smith, of Hoyland, near Barnsley.

DEATH.

FIELDEN.—On Sunday, 22nd March, Lillie Louise, the wife of Dr. W. E. Fielden, of Burgess Hill, Sussex. Will friends kindly accept this intimation?

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE IDIOCY OF SPIRITUALISM.

WE have received a copy of an amazing publication called the *Spiritualist*. The proprietors are the Spiritualist Publishing Company and the chief publishing office seems to be at Church-street, Keighley. Judging by the contents the paper also circulates in Burnley and in Bradford. It is astonishing to find that the hard-headed north-countrymen can believe the drivel of spiritualists. Keighley, of course, is an anti-vaccination centre which accounts for much, but we should have thought that Bradford and Burnley knew better. The advertisement columns are full of the baits of quacks of every description. Prominent among them is T. R. Allinson glorifying a new food and his Book for Ladies. There is also a Madame Burchell who dates her advertisement to her "patients" from an address in Bradford which is the same as that of a firm of pill manufacturers and medical botanists. Besides making pills this firm sells a work on piles. We gather that spiritualists suffer much from piles for Messrs. Burchell make a "splendid offer to societies and lyceums; a neat little booklet upon Good Health, How to get it and How to keep it. Also Piles, their cause and cure, to sell at Twopence." A person calling himself Dr. Alan Fisher holds himself up as The Great Magnetic specialist and further states that having second sight he can see through the human system, hence cannot fail. It does not require second sight to see through "Dr." Alan Fisher. He lives at 72, Gloucester-place, W., but his name does not appear in the Medical Directory or the Medical Register. "Dr." Fisher modestly conceals his qualifications, but since he mentions his hours of consultation we presume that he needs at least to see his patient. A rival practitioner, however, whose advertisement appears on the following page goes one better. She is Madame Bradley, M.D., U.S.A., and lives in Newcastle, Staffs. All she wants is a lock of hair properly wrapped up by the person seeking advice. Age and sex to be stated. We commend the taxation of parties such as these to the Chancellor of the Exchequer, as, for one year at least, he might reap a handsome sum by imposing a prohibitive tax. After that time we hope that the fraternity would be taxed out of existence.

MOTOR-CARS FOR MEDICAL MEN.

THE Daimler Motor Company, Limited, 219, Shaftesbury-avenue, London, W.C., have made arrangements for the hire of motor carriages by the day or the week which will admit of medical men familiarising themselves with the use of motor-cars. Communications should be made to the Brownlow Mews, Guilford-street, W.C., with regard to the tariff for hire of the cars and also with regard to the charges for storing and cleaning cars and charging accumulators. We recommend all medical men who are thinking of purchasing motor-cars—and we have reason to believe that their number is large—to make themselves acquainted with the construction and action of the car which they select for purchase.

"THE UNCROWNED KING OF THE APPENDICITIS PILL."

WE have received a long communication from Mr. H. S. Schultess-Young with regard to the printed testimonial sent to this office by someone writing as Whitefoord's secretary. Mr. Schultess-Young says: "I gave no such testimonial. What I did say on hearing from my client of the great demand for his pills, 'If you go on selling them like that you will make your fortune!'" The rest of Mr. Schultess-Young's letter is taken up with a consideration of "the severe attack you have, I think unfairly, made upon that unfortunate old gentleman Mr. Whitefoord." Does Mr. Schultess-Young regard the performance of criminal abortion as a peccadillo that can be atoned for by a little contrition?

WANTED—A SUGGESTION FOR TREATMENT.

To the Editors of THE LANCET.

SIRS,—Can any of your readers give me any hints as to treatment in the case of an adult male suffering from symptoms resembling "erythromelalgia" affecting the feet, chiefly the left foot? There are pain, worse in the evening, swelling and redness in the sole, simulating deep-seated inflammation. The attacks have lasted off and on for three years. They commenced after a mild attack of influenza. No history of any other illness has been obtainable. The patient seems to be perfectly sound but for the pain and swelling of the feet. He has been in two London hospitals and had every form of treatment imaginable, but nothing seems to afford much relief except absolute rest.

I am, Sirs, yours faithfully,

March 24th, 1903. M.D.

ACCIDENTS CAUSED BY TRAMCARS, MOTOR-CARS, AND OTHER VEHICLES.

WE have received a circular which we commend to the notice of the Royal Commission on London Traffic. The author of the circular is Mr. Jas. T. Pearson, electrical and mechanical engineer and manufacturer of Burnley, and he has invented a bell, a brake, and a life-guard which he is of opinion should be made compulsory upon all quick-running vehicles, "because the accidents and 'frights' caused, especially by motor-cars and cycles, which generally approach '*like a thief in the night*,' or flash past like some unearthly sprite or goblin, particularly on a country road, and startle people nearly out of their wits who are taking a lonely walk to commune with their thoughts, or their beloved, especially such as have highly-strung or weak nervous systems, or are in a deep study." Mr. Pearson's literary style is evidently formed upon a close study of that of Lord Grimthorpe. Mr. Pearson's bell is automatic and rings continually; it also has "the same and a pleasant tone, distinct from any other," a remark which somehow reminds us of Rawdon Crawley's entry in his inventory: "My duelling pistols, same which I shot Captain Marker." Mr. Pearson's brake is an obstacle brake, "a solid block of metal which ..... is held three inches above and suspended by chains to the car and the frame of cycles." When an obstacle is in front the chains are released, the brakes drop in front of the wheels, which mount them, and the vehicle is brought to an abrupt stand. We should have thought that a tramcar treated thus would go off the line, but we may be wrong. Finally, the guard is made of wire-netting covered with rubber and to give Mr. Pearson's own description, "When a person comes in contact with it, it is tripped up by the heel and its legs knocked from under it and falls down on to the cradle, and is carried along until the car stops without being injured to any serious extent." We think that possibly this guard might be of value, but we cannot say the same for the bell or the brake.

A QUESTION OF ACCOUNTS.

To the Editors of THE LANCET.

SIRS,—I should like your opinion in the following matter. A and B are in partnership. A dies, and in settling the accounts of the partnership A's executors do not wish to include the money paid by B for surgical and other instruments which were necessary for conducting the practice on modern scientific principles. A made no protest during his lifetime. Is B right in insisting that this money should be brought into the accounts? A and B both benefited, of course, from the use of the instruments.

I am, Sirs, yours faithfully,

March 24th, 1903. SCRUTATOR.

*** As the instruments were used by the firm it certainly seems fair that the partnership account should pay for them, but the executors will probably only take this view upon the advice of their solicitors. Executors must be very stern men of business and must take every precaution to do their best by the estate. Therefore their dealin s with claims against an estate often appear mean or harsh.—ED. L.

THE BEAUFORT ARTIFICIAL LIMBS.

To the Editors of THE LANCET.

SIRS,—Can any of your readers give me information about the Beaufort artificial limbs manufactured by Worder of Paris?

I am, Sirs, yours faithfully,

York House, Uckfield, March 24th, 1903. E. H. SWEET.

"AN OPPORTUNITY OF 'INFAMY.'"

To the Editors of THE LANCET.

SIRS,—I have again received the odd resolution of the General Medical Council passed in December, 1898. It states that if a registered medical practitioner knowingly and wilfully assists *any* person who is *not registered as a dentist* in *any* operation in dental surgery he may be dealt with as having been guilty of infamous conduct. Surely in every part of Great Britain men in general practice are daily helping one another in what are certainly operations in dental surgery, the operator *not* being a registered dentist of any kind. If the Council means what it says there is nothing more to be said except that it is silly; but if it means that a registered medical practitioner must not assist a man who is *neither* a registered practitioner *nor* a registered dentist it might be as well to say so.

I am, Sirs, your faithfully,

March 21st, 1903. A REGISTERED MEDICAL PRACTITIONER.

IMPORTANT TO PROVISION DEALERS.

AN improved method for opening paper bags and separating shop papers has been devised by Mr. Reay Thornton, of Warwick-road, Cliftonville, Margate. The invention consists of a rectangular piece of flat board into one side of which, towards one end, is fitted a glass well of a special design containing a sponge and into the same side of which, towards the opposite end, is fixed a slab of cork. The well is placed at an equal distance from each edge of the board, but the cork is not, having a larger margin on one side. In the specimen which we have seen the board measured 13½ inches by eight inches and the cork five inches by four inches. The inventor describes the method of use as follows. "The fingers are moistened on the damper, so that the bag may be easily grasped and torn down. In the same movement it is brought into contact with the piece of cork and held firmly thereon by the thumb and by a natural movement of the fingers towards the thumb the bag immediately opens." He adds that the old practice, even with improved bags, is to moisten the finger with saliva and then to blow into the bag, which at best is not cleanly and if the person so doing is not in good health it is worse. There is no doubt that these offensive habits are indulged in by some shopmen

either through thoughtlessness or wilful disregard of sanitary measures, but we hardly think that such practices would be permitted in any shop with a reputation to maintain. It is as well, however, that customers who appreciate cleanliness should politely but firmly insist upon such practices being discontinued wherever they are found and we think that Mr. Thornton's invention is an effort in the right direction. We also think that if all bags were made with one side of the mouth slightly shorter than the other or with a notch cut into one side at the top, it would permit of their being more easily opened, but this is perhaps because we have not proved quite expert in the manœuvre described by the inventor. Evidence has been produced to us that the bags can be opened by the inventor's method at the rate of eight per second, but such lightning speed can hardly be required and certainly could not be maintained.

A CORN EXTIRPATOR.

MR. ADOLPHE ARBENZ has sent us a specimen of a new corn extirpator for which he claims a great many advantages. He points out that razors and other sharp instruments are not convenient implements to cut corns with, and he has therefore designed his instrument which is a sort of scraper. The small steel blade, only some two inches long, has saw teeth, the serrations, which are very close, being turned downwards towards the handle. The corn having been softened by immersing the foot in hot water is scraped towards the operator by the teeth of the instrument when the teeth gradually lift up and finally erase the hardened patch of skin. Mr. Arbenz attempts to prove too much when he suggests that razors cause blood poisoning or that corn-plasters "weaken the flesh," but there is no doubt that for the removal of hard pieces of skin from the heels and soles of the feet, or from other places where friction occurs, he has devised a very handy little tool.

A WARNING.

To the Editors of THE LANCET.

SIRS,—Information has reached us of a fraud practised upon a member of the profession residing at Clapham.

A man on crutches purporting to be an agent for the sale of our publications induced the medical man in question to part with 6s. 3d. in payment of a book selected from our list. As we are totally unacquainted with the man it is needless to add that the book was never received.

By the insertion of this letter we hope to prevent a similar deception being perpetrated, or better, to give a clue which may lead to his arrest. We are, Sirs, yours faithfully,

J. AND A. CHURCHILL.

Great Marlborough-street, London, W., March 23rd, 1903.

MILNE'S STERILISED ABSORBENT RIBBON GAUZE.

THE Galen Manufacturing Company, Limited, of Wilson-street, New Cross-road, London, S.E., has sent us samples of two forms of Milne's sterilised absorbent ribbon gauze for the plugging of wounds and cavities in surgical operations. The gauze is in long narrow strips having a woven edge so as to prevent fraying and is both soft and absorbent. The makers supply the gauze medicated with any antiseptic. Of the samples sent to us one contained iodoform and the other, which was intended for wounds of a particularly foul nature, contained acetate of aluminium.

NON-LEAKABLE FOUNTAIN PEN.

To the Editors of THE LANCET.

SIRS,—I have been a constant user of fountain pens for about ten or 12 years and can therefore speak from some experience. The earlier makes, which are still widely advertised, have the fault that they become dry at the nib between each time of using and require the nib-end to be unscrewed before re-filling. The one mentioned in THE LANCET of Feb. 21st (p. 562) is frequently ruined when an attempt is made to replace the cap, as there is no means then of protecting the nib and it may easily be screwed up too far with the same result. I have now adopted Moore's non-leakable fountain pen; the nib is always moist and ready for use; it requires no removal of nib-end to fill and can be carried in any position. I am, Sirs, yours faithfully,

EXPERTUS.

WHY APPENDICITIS?

To the Editors of THE LANCET.

SIRS,—In THE LANCET of March 21st, p. 797, Dr. F. E. Wood of Windsor describes the case of a woman who had a local peritonitis which he attributed to perforation of the appendix. An operation was performed but "the appendix was not seen, so no attempt was made to remove it." May I ask Dr. Wood to be good enough to say why he still called the case one of appendicitis?

I am, Sirs, yours faithfully,

March 21st, 1903. S. W.

OFFICIAL NOMENCLATURE.

To the Editors of THE LANCET.

SIRS,—By Section 20 of the Births and Deaths Registration Act, 1874 (37 and 38 Vict., c. 88), it is enacted that in the case of death the practitioner in attendance during the last illness of the deceased "shall sign and give a certificate stating to the best of his knowledge and belief the cause of death." Had I been Mr. W. H. Kesteven, therefore, I would have politely informed the registrar who refused the death certificate (1) that I had fulfilled the law of the land; (2) that not being a Member or Fellow of the Royal College of Physicians of London I objected to be dictated to by any nomenclature published by its committee; and (3) that as the death certificate was a piece of gratis work on my part in so far as the State was concerned I objected to follow any nomenclature adopted by registrars in general.

On one occasion I attended a patient "during his last illness" which I strongly suspected to have been due to poisoning. I refused to give a death certificate but no post-mortem examination was ordered and the deceased was buried seemingly without the death being certified.

In this district a policeman is usually sent to inquire of the practitioner the suspected cause of death in any given case and if the practitioner expresses an opinion it is conveyed to the coroner and the practitioner finds himself minus his fee. If he gives no opinion the non-medical coroner with the aid of his "12 men good and true" satisfy themselves as to the cause of death. The coroner's salary, it seems, is a stated one.

In another district, where I happened to be acting as locum-tenent last year, there were no less than seven inquests one forenoon. Three of these, including my own one, need not have been held, as death was undoubtedly due to natural causes and we three practitioners were quite willing to give certificates. The patient had been buried at least two days ere the inquest was held. The coroner's salary, it seems, depends upon the number of inquests held.

So long as we are treated in the above fashion by registrars, coroners, and the law of the land I fail to see that any good can come from bending our knees before those who show hostility towards the members of our profession. I am, Sirs, yours faithfully,

VERITAS.

THE ATHLETES OF ANTIQUITY.

WITH reference to the physical or muscular strength of the human race in ancient times it is well known that the classics make some extraordinary statements as to athletic feats performed by Greeks; also, the development of the muscles indicated by delineations of the human figure upon Assyrian monuments is enormous. A Greek inscription recently found at Olbia in South Russia assigns to a certain Anaxagoras, son of Demagoras, a marvellous proof of strength in the distance to which he shot an arrow, for it amounts to over 566 yards (there is a little doubt as to the precise length of the measure mentioned and it might be only 525 yards). Probably the bow was of Scythian style, in several pieces, for our Agincourt bow could never achieve such a distance, the average long-bow shot being about 240 yards. There is a record that in London the Turkish Ambassador's secretary shot 482 yards with the wind. The text at Olbia says nothing as to wind, but it is obvious it must have been favourable.

Dr. T. A. Buck.—We agree with our correspondent that the publicity is undesirable.

ERRATUM.—In THE LANCET of March 21st there appeared a review of a book entitled "Die Antikörper." The author's name was erroneously given as "Dr. Freiherr"; it should have been "Dr. Emil Freiherr von Dungern."

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (30th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (31st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.) London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.).

WEDNESDAY (1st).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M).

THURSDAY (2nd).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat, (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (3rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.).

SATURDAY (4th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (30th).—ODONTOLOGICAL SOCIETY OF GREAT BRITAIN (20, Hanover-square, W.).—7 P.M. Council. 8 P.M. Casual Communications:—Mr. H. Baldwin: The Design of Small Plates.—Mr. F. Talbot: Displacement of Unerupted Teeth in a Case of Cyst of the Upper Jaw. Paper:—Prof. Miller (Berlin): Studies relating to the Question of Immunity in the Human Mouth. Adjourned Discussion on Mr. A. Lane's paper on Some Points in the Mechanics of the Jaws (opened by Mr. T. E. Constant).

TUESDAY (31st).—THERAPEUTICAL SOCIETY (Apothecaries' Hall, Water-lane, Blackfriars).—3.30 P.M. Council Meeting. 4 P.M. General Meeting. Papers:—Dr. N. Tirard: Some Dangers of Hypnotics.—Mr. P. Beale: A New Film for Antiseptic Treatment.

WEDNESDAY (1st).—OBSTETRICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8 P.M. Specimens will be shown by Dr. H. Williamson, Dr. Lea, Dr. Fairbairn, Dr. Groves, and Dr. W. C. Swayne. Short Communication:—Dr. V. Bonney: A Case of Primary Infection of the Puerperal Uterus and Vagina by the Pneumococcus. Papers:—Lieut.-Col. A. J. Sturmer: Four Cases of Ruptured Extra-uterine Gestation occurring in Two Women, Removal by Abdominal Section, Recovery.—Mr. W. Sampson Handley: A Case of Hydrosalpinx of an Accessory Fallopian Tube due to Twisting of the Pedicle.

THURSDAY (2nd).—HARVEIAN SOCIETY OF LONDON (Stafford Rooms, Titchborne-street, Edgware-road, W.).—8.30 P.M. Paper:—Dr. L. Guthrie: On Some Ancient Remedies.—Mr. R. Johnson: Some Mistakes in the Diagnosis of Malignant Disease.

ROENTGEN SOCIETY (20, Hanover-square, W.).—8.30 P.M. Paper:—Mr. J. H. Gardiner: Some Effects produced by Radiations.

NORTH-EAST LONDON CLINICAL SOCIETY (Tottenham Hospital, N.).—4 P.M. Clinical Cases.

NEUROLOGICAL SOCIETY OF THE UNITED KINGDOM (11, Chandos-street, Cavendish-square, W.).—8.30 P.M. Paper:—Dr. S. F. Buzzard: The Pathology and Bacteriology of Landry's Paralysis (illustrated by specimens).

FRIDAY (3rd).—WEST KENT MEDICO-CHIRURGICAL SOCIETY (Royal Kent Dispensary, Greenwich-road, S.E.).—8.45 P.M. Discussion on the Principles of Dietetics (opened by Dr. R. Hutchison). The President, Dr. M. Dockrell, Dr. F. S. Toogood, Dr. R. E. Schofield, Dr. H. Woods, Dr. L. Williams, Mr. C. Williams, and Mr. C. Ryall have promised to take part in the discussion.

LARYNGOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—5 P.M. Cases will be shown by Mr. L. A. Laurence, Dr. W. H. Kelson, Dr. Donelan, and others.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (30th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. M. H. MacLeod: Clinique. (Skin.) 5.15 P.M. Dr. A. Morison: Some Important Considerations in the Treatment of Heart Disease.

TUESDAY (31st).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Dr. T. R. Glynn: On Infective Endocarditis mainly in its Clinical Aspects. (Lumleian Lecture.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. W. Ewart: Clinique. (Medical.)

WEDNESDAY (1st).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. J. Cantlie: Clinique. (Surgical.) 5.15 P.M. Mr. H. Pinch: Diphtheria and its Antitoxin Treatment.

THURSDAY (2nd).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Dr. T. R. Glynn: On Infective Endocarditis mainly in its Clinical Aspects. (Lumleian Lecture.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. J. Hutchinson, jun.: Clinique. (Surgical.) 5.15 P.M. Mr. H. Pinch: Diphtheria and its Antitoxin Treatment.

FRIDAY (3rd).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. S. Stephenson: Clinique. (Eye.) 5.15 P.M. Mr. S. Paget: The Use of Paraffin in Plastic Surgery.

ROYAL INSTITUTION OF GREAT BRITAIN (Albemarle-street, W.).—9 P.M. Right Hon. Lord Rayleigh: Drops and Surface Tension.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. II. of 1902, which was completed with the issue of Dec. 27th, and the Title-page to the Volume, were given in THE LANCET of Jan. 3rd.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1902 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, March 26th, 1903.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
Mar. 20	30·18	S.W.	0·03	91	58	50	48	52	Cloudy
,, 21	30·19	S.W.	...	95	58	48	45	49	Cloudy
,, 22	30·03	S.W.	...	102	63	49	49	52	Cloudy
,, 23	29·81	S.W.	0·28	102	62	49	49	54	Cloudy
,, 24	29·81	S.W.	0·02	85	54	41	44	45	Cloudy
,, 25	29·49	S.W.	0·11	102	67	45	50	53	Cloudy
,, 26	29·35	S.W.	...	89	55	48	48	51	Cloudy

During the week marked copies of the following newspapers have been received: *Kidderminster News, Staffordshire Sentinel, Westminster Gazette, Hertfordshire Mercury, Windsor and Eton Express, Standard, South Wales Daily News, Manchester Guardian, City Press, Mid Sussex Times, Walsall Advertiser, Surrey Advertiser, Coventry Herald, Birmingham Daily Mail, Yorkshire Mercury, Herts Advertiser, Times of India, Reading Mercury, Mining Journal, Local Government Chronicle,* &c.

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